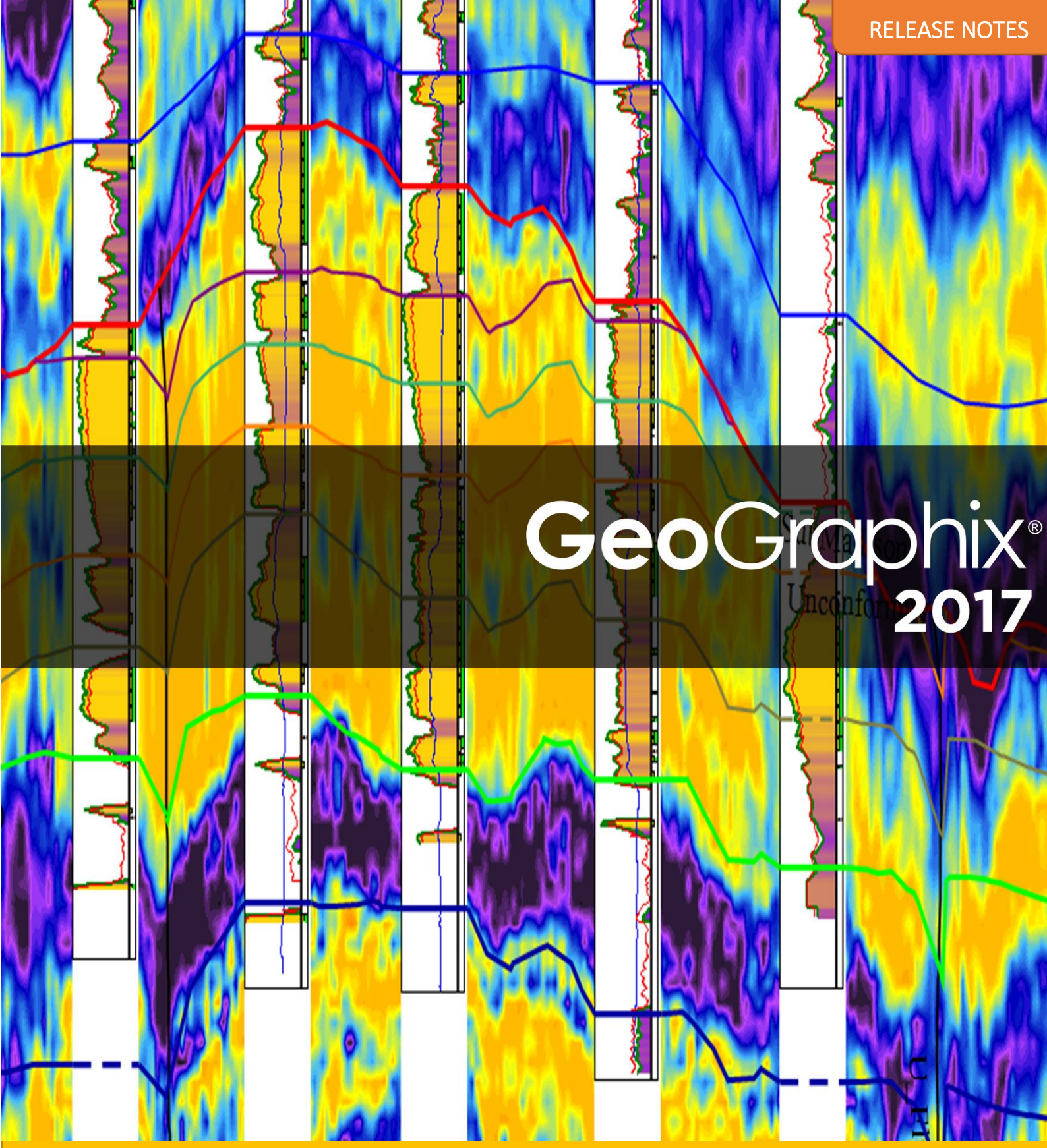
RELEASE NOTES



GeoGraphix® 2017

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Note

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GeoGraphix® and Discovery™ on OpenWorks® 2017.1

LMKR is pleased to announce the release of the GeoGraphix® and Discovery™ on OpenWorks® 2017.1 software.

This release includes major Geology upgrades, and also brings many new features and performance improvements, 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 2017.1 release.

Note: The GeoGraphix 2017.1 release is a license-control release that requires a license file. The LMKR License Management Tool (LMT) must be installed to configure the license. Download the latest LMT from the **LMKR Support Portal - Downloads** page (http://support.lmkr.com/). See the "LMKR Licensing" section of the Installation Guide for Release 2017.1 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 2017.1 is an integrated product suite that incorporates shared data management and geological, petrophysical, and geophysical interpretation software. It utilizes a Sybase (GXDB) database 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 base maps, 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 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 tool and cross section display tool

PRIZM™

- An interactive petrophysical and log analysis system

smartSECTION® with FrameBuilder™

- The next generation geological 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 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, LogMModelBuilder (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 2017.1 release are listed below.

GVERSE™ Geomodeling

- The GVERSE™ Geomodeling application is an integrated environment for geological/reservoir modeling that incorporates existing mapping and cross section features of smartSECTION with the 3D view. Click here for details.

smartSECTION

- smartSECTION is supported in 64 bit. Click here for details.
- The Quick Pick mode is available in the Map View. Click here for details.
- Revert to previously used zoom level. Click here for details.
- Selective tops picking option is available. Click here for details.
- An option to limit the depth interval over which the UDE or external model is run is added. Click here for details.
- The Concavity Factor option available in the Faults tab. Click here for details.
- Wells can be highlighted based on the spatial selection or filter criteria by creating well groups. Click here for details.
- The Cutoff Guideline tool is added to the Formation/Fault/Interval toolbar. Click here for details.
- An option is added to use the line labels to mark the beginning and end of the line of section. Click here for details.
- The Add Interwell Point button is available as a toggle button. Click here for details.
- Well display properties customization feature is available. Click here for details.
- Modeled vertical curves in the Vertical Panel can be exported to a LAS file. Click here for details.
- Type logs can be created. Click here for details.
- Fault polygons and unconformity intersections can be viewed. Click here for details.

PRIZM

- Specify custom titles of curvesets. Click here for details.
- Selective merge/splice of curvesets is supported. Click here for details.
- Set the values of crossplot axes to display small permeability values. Click here for details.
- Adjust the transparency level of lithology fills. Click here for details.
- Import new curves and merge them into an existing computed curves set. Click here for details.
- Customize well ID format. Click here for details.

DepthRegistration

- Display log scale with the log name. Click here for details.

QueryBuilder

- Log data filters display in alphabetical order. Click here for details.

WellBase

- Strat Column drop-down list is added to the Calculate Formations dialog. Click here for details.

GeoAtlas

- ESRI ArcEngine 10.4.x and 10.5.

Field Planner

- Thematic coloring of different payzones is supported. Click here for details.
- DLS values are organized in the Build Rate column, and are stored in an XML file. Click here for details.
- Pad polygons edits are preserved and saved in the database. Click here for details.
- Well selection is improved. Click here for details.
- Decimal points support is added for Azimuth values. Click here for details.

Lease Planner

- Add or remove multiple tracts. Click here for details.
- Modify or delete setbacks. Click here for details.
- Setbacks can be included within tracts. Click here for details.
- View the shape file location. Click here for details.
- Lease Area color is modified. Click here for details.

For details on the above new features, fixed issues and known issues for the GeoGraphix 2017.1 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:

- The GeoGraphix 2017.1 release is a license-control release that requires a license file. The LMKR License Management Tool (LMT) must be installed to configure the license. Download the latest LMT from the **LMKR Support Portal - Downloads** page (http://support.lmkr.com/). See the "LMKR Licensing" section of the Installation Guide for Release 2017.1 for more information.
- Discovery on OpenWorks is compatible with OpenWorks for Windows 5000.10.3.02 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 Windows® 7 Enterprise x64 Windows® 7 Ultimate x64 Windows® 10 Professional x64 Windows® 10 Enterprise x64	8 GB Minimum 16+ GB recommended	Pentium i5/i7 or any Quad Core Processor

Note 1: We recommend using the latest Microsoft service packs and security patches. GVERSE Geomodeling specifically requires Windows platform update KB2670838 installed on the machine, in case the operating system is Windows 7.

Additional Requirements and Recommendations

- DVD-ROM required for media installation. Download installation available through Electronic Software Delivery at http://support.lmkr.com.

- DCOM/Firewalls configuration is required to allow remote access. This is necessary when working with shared projects on the network.
- Microsoft .NET 4.5.1 runtime required.

Graphics Hardware Requirements

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

Applications Support Level	Required Operating System	Graphics Hardware
All GeoGraphix Applications including Discovery 3D, Advanced 3D Visualization (Pro 3D), and GVERSE Geomodeling	All Supported	2 GB Minimum 4 GB Recommended DirectX 11 capable hardware **(see Note 2)**
GeoGraphix Applications *except* for Discovery 3D, Advanced 3D Visualization (Pro 3D) and GVERSE Geomodeling	All Supported	All Supported

Note 1: Microsoft DirectX End-User Runtime (June 2010) is required to run Discovery 3D, advanced 3D visualization (Pro 3D), and GVERSE Geomodeling.

Note 2: To run Discovery 3D, advanced 3D visualization (Pro 3D), and GVERSE Geomodeling, it is recommended that an NVIDIA DirectX 11 compatible card be used. We recommend using the latest video drivers and Microsoft updates for your system.

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, 2010, or 2013 (32 or 64 bit) In case the macros are not working in Excel, ensure the **gxdb.xla** file is present in the relevant Microsoft Office Library installation folder, and the net pipe adapter service is running.
Selected Help files	Adobe Reader
For Discovery on OpenWorks, GridXchange, and SeisXchange	OpenWorks for Windows 5000.10.3.02 – Basic or Full (recommended) Install available on Landmark's LSM. (See Notes on the next page), and SeisWorks 5000.10 (for seismic workflows)
ESRI geo-referenced images and ESRI CAD file import in GeoAtlas	ESRI ArcGIS Runtime Engine 10.2.x or 10.3.x or 10.4.x or 10.5 (included in the 3rd Party Installer).
For LOGarc™ Version 4.1.0.3 access in smartSECTION	To use the LOGarc™ feature, the LOGarc™ Version 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
- SQL*Plus
- Oracle JDBC/THIN Interfaces
- Oracle Net

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 Windows® Server 2008 R2 Enterprise x64	32 GB Minimum 64+ GB Recommended SSD Drives Recommended	Intel Xeon Processor or Equivalent Quad 2.4GHz 64-bit or Equivalent

Additional Requirements and Recommendations

- DVD-ROM is required for media installation.
- DCOM/Firewalls configuration is required to allow remote access. This is necessary when working with shared projects on the network. For DCOM configuration recommendations, refer to the white papers on the LMKR Support Portal.

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

OpenWorks Version	OW License 5000	DOW License 5000.02										
	GeoGraphix Version	2017.1	2016.1	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 5000.10.3.02	**R**	**C**	**U**	**U**							
	OW 5000.10.1.05		**R**	**R**	**R**							
	OW 5000.8.3.01		**R**		**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**

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.

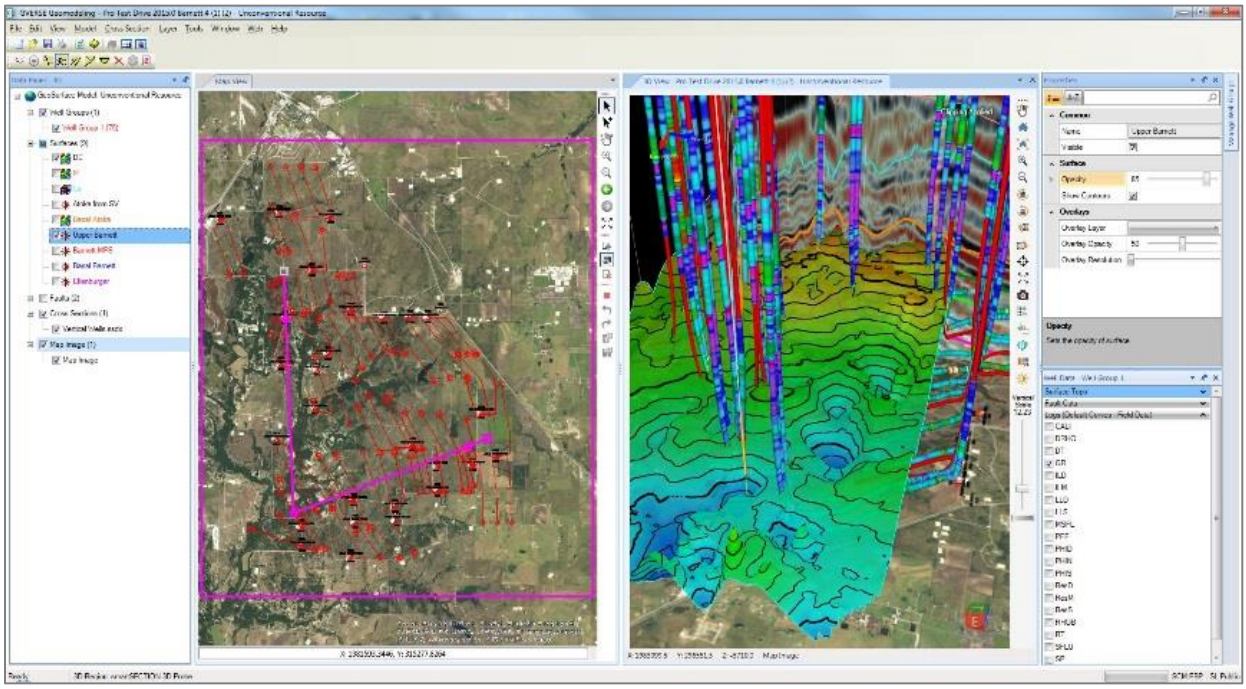
New Features

This section contains a brief description of the exciting new features included in the 2017.1 release.

GVERSE Geomodeling

LMKR is pleased to announce the release of GVERSE Geomodeling 2017.1. The GVERSE Geomodeling application is an integrated environment for geological/reservoir modeling that incorporates existing mapping and cross section features of smartSECTION with the 3D view.

With GVERSE Geomodeling, you can integrate petrophysical, geophysical, drilling, and GIS data into your interpretation to create the most comprehensive geomodel possible. The integrated real-time map view, cross section view, and 3D visualization helps you develop a detailed geomodel with greater precision.



For details on GVERSE Geomodeling, refer to the GVERSE Geomodeling release notes and installation guide.

smartSECTION

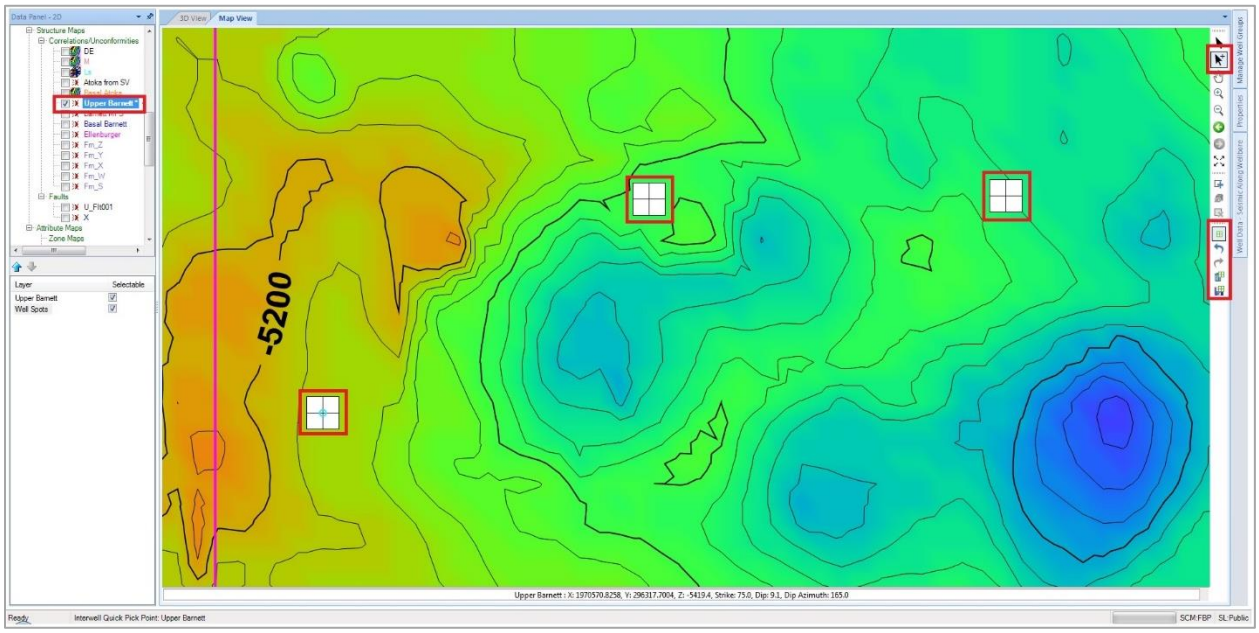
This section introduces the updates made in smartSECTION.

smartSECTION 64 bit

smartSECTION is supported in 64 bit to enable users to work seamlessly with larger projects.

Quick Pick in Map View

Quick Pick mode is added to the Map View for adding interwell points to selected surfaces. You can move the virtual interwell points with multiple redo and undo options, and commit the point to the database and model easily. In the Cross Section View, choose **Tools >> Enable Quick Pick Mode** to start picking.



Restore Zoom

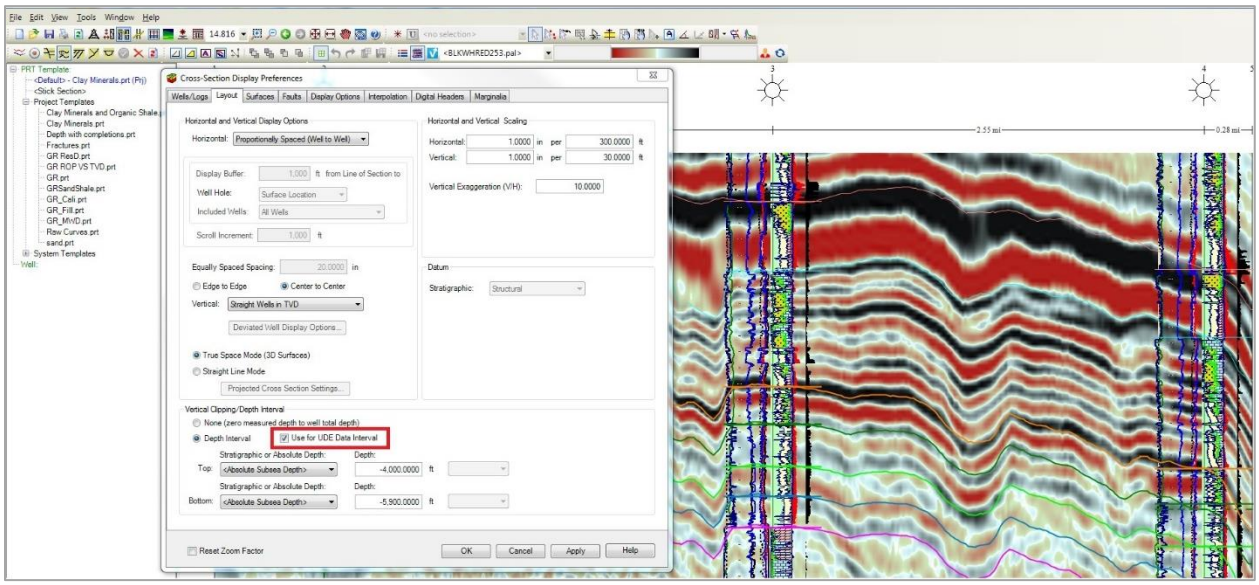
You can zoom in or out several times on a cross section and can revert to any zoom level previously used.

Selective Tops Picking

When selecting wells for cross section, you can exclusively include those wells that have vector curves and/or raster logs in the Buffered Projected Cross Section, to pick tops only on the wells with logs.

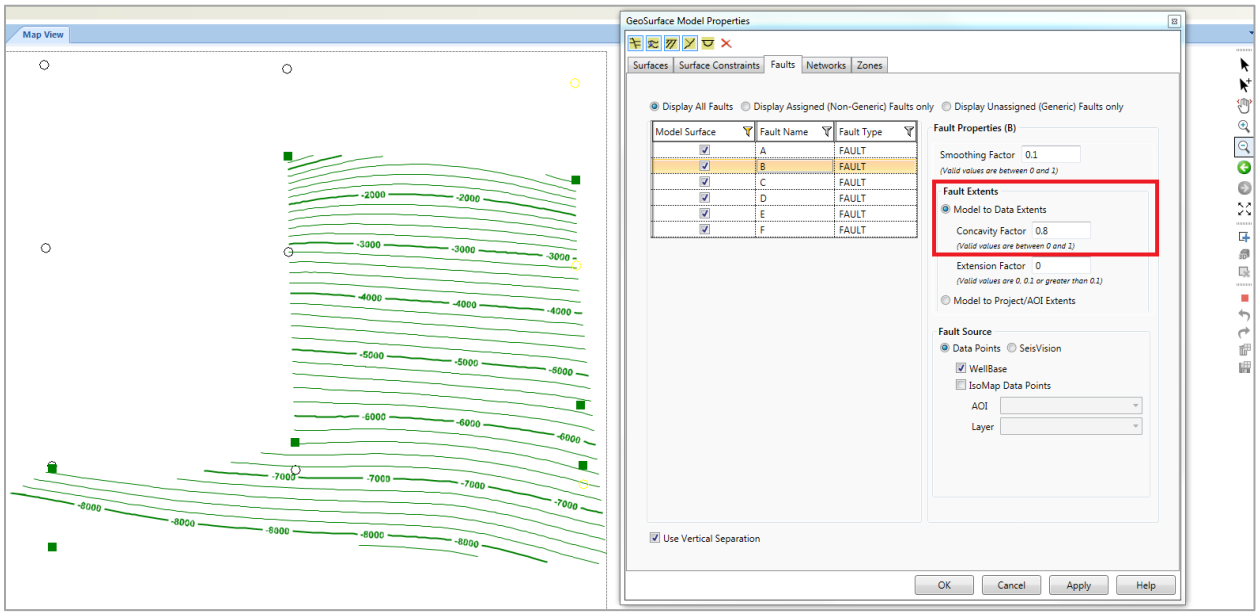
UDE Data Interval

Experience enhanced performance with the option to limit the depth interval over which the UDE or external model is run. With the **Use for UDE Data Interval** option selected, the petrophysical model is just run over the range of the Depth Interval specified in the **Vertical Clipping/Depth Interval** group box.



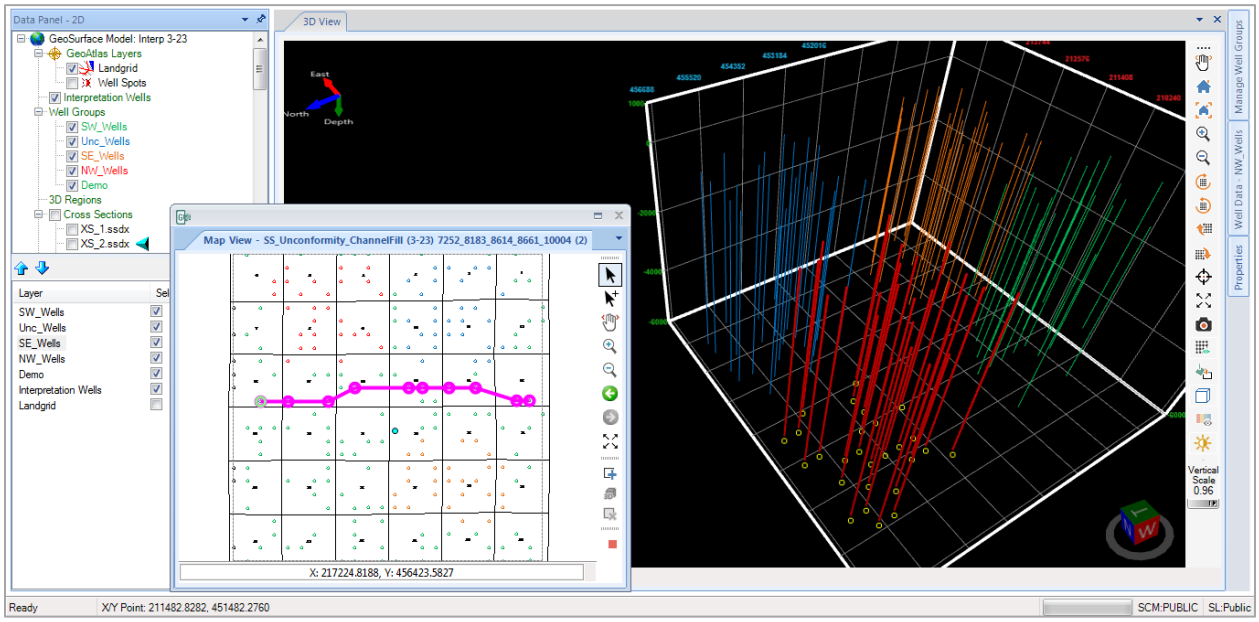
Concavity Factor

The option of Concavity Factor is added to the Faults tab of **GeoSurface Model Properties** dialog to control the extension of surface modeling to the extents of the data. By default, the Concavity Factor is set at 0, however, you can choose any value between 0 and 1.



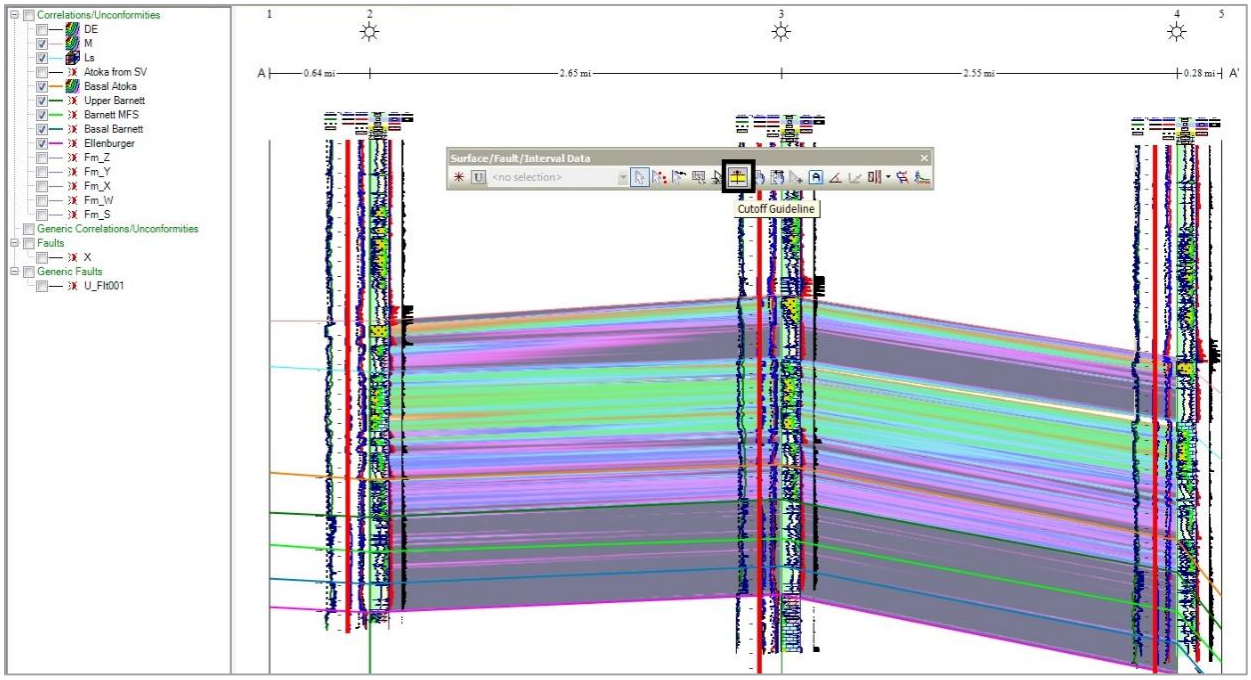
Highlight Wells

Highlight the wells based on the spatial selection or filter criteria by creating well groups. You can select the wells on the map and then choose a color to highlight them both on the Map View and 3D View. Using the Manage Well Groups panel, you can create new well groups, delete the existing groups, rearrange the order of the groups, and modify their color code.



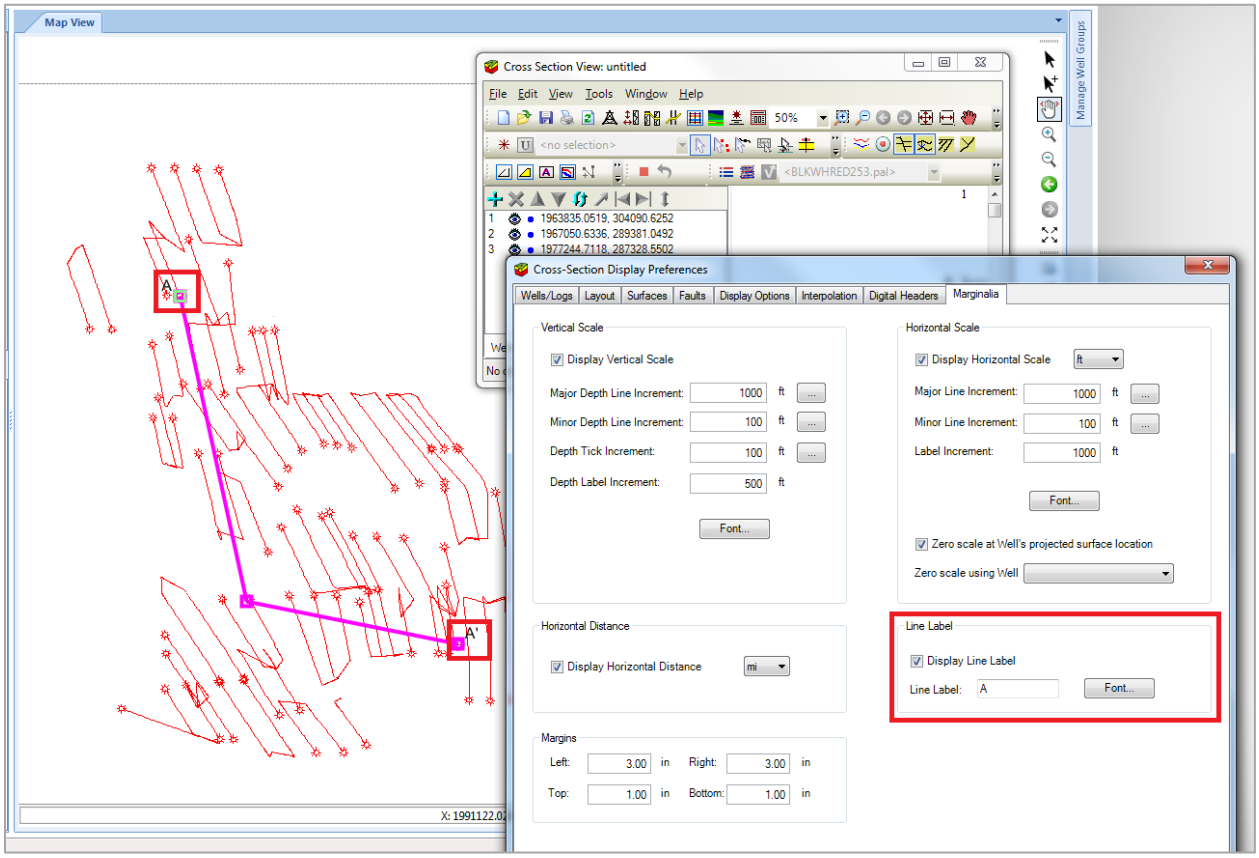
Interval Cutoff Line

Cutoff Guideline tool is added to the **Formation/Fault/Interval** toolbar that draws a vertical line on each well in the cross section. You can draw and move a cutoff line on raster and vector images to help interpret the intervals.



Line Labels

On the **Marginalia** tab of the **Cross-Section Display Preferences** dialog, an option is added to use the line labels to mark the beginning and end of the line of section in order to identify the orientation of the cross section with respect to the Line of Section on the map. Select **Edit >> Marginalia** from the menu in Cross Section View and specify the desired label in the **Line Label** group box.



Add Interwell Point

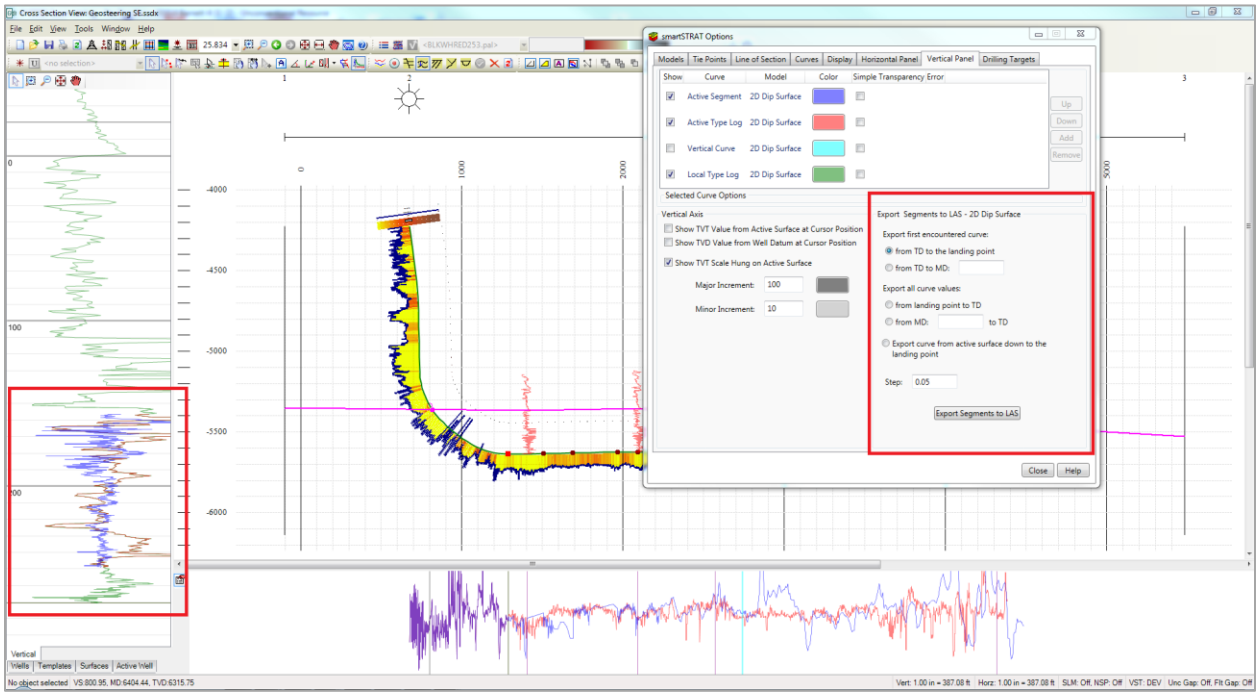
The **Add Interwell Point** button is made a toggle so it stays on or off until the user reselects it, both in Standard and Quick Pick mode.

Well Display Properties Customization

The **Wells Layer Display Properties** dialog is added to provide options to customize the wells layer. You can set a custom value for the size of the Well Symbol (in meters and feet), change the Wellbore Symbol color, Wellbore Path color, Local Log Availability color, and Remote Log Availability color. The Well Symbol Size is applied to well symbols of the Wells layer and associated log availability symbols are proportionately scaled too.

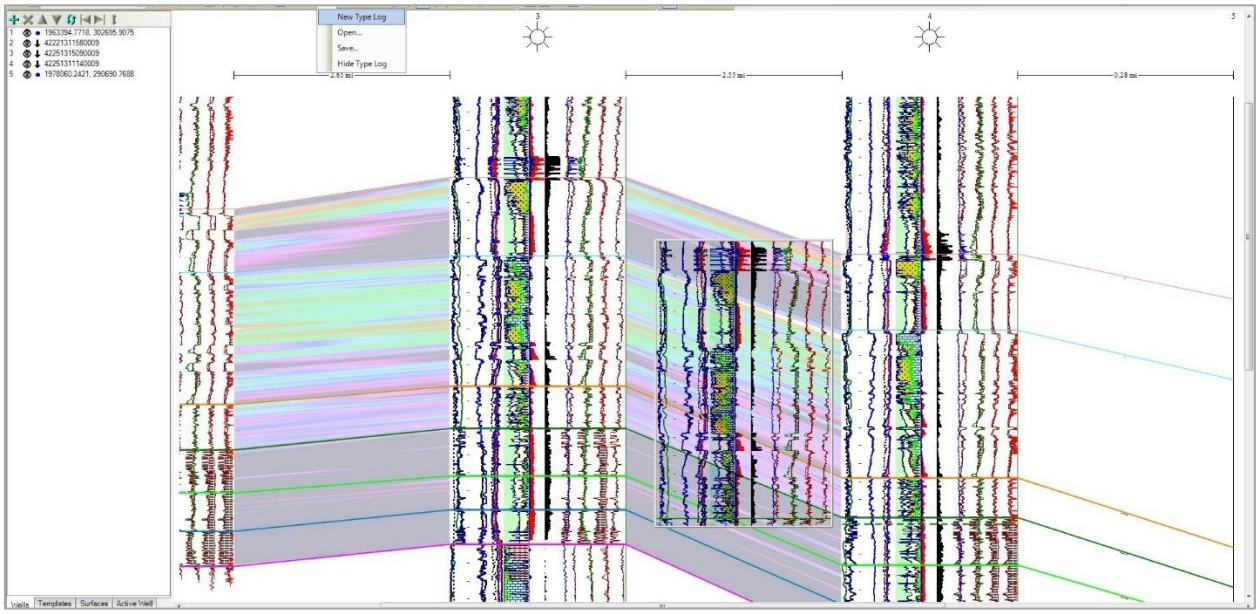
Vertical Curve Export to LAS

Export the modeled vertical curves in the Vertical Panel to a LAS file to use the curve in other applications. The smartSTRAT Options dialog provides options to export all curves or only the first encountered curves with their depths in MD or TVD. To use this option, select **Tools >> smartSTRAT Tool** from the cross section view menu bar, and then click **Options button**  **>> Vertical Panel** tab.



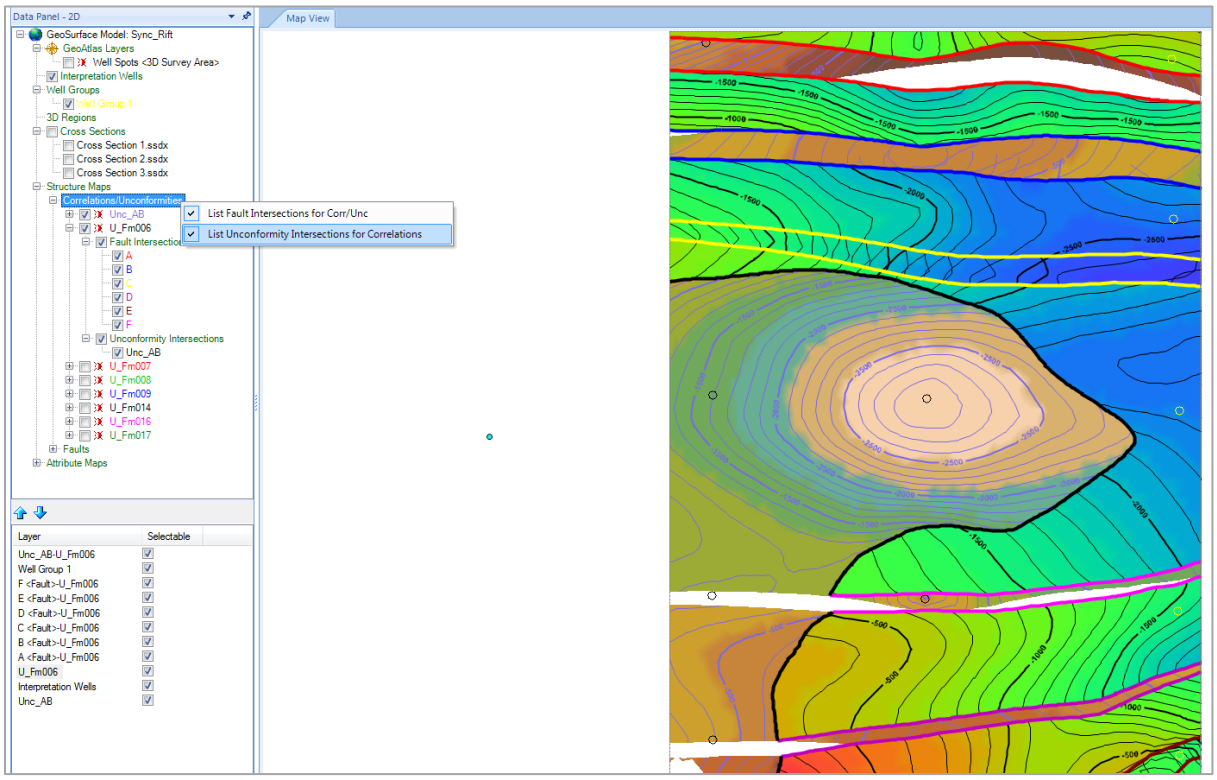
Type Log

Create a Type Log to quickly and effectively correlate or pick formation tops in a cross section. Choose **Tools >> Type Log >> New** to create a new type log. You can save, flip, resize, or hide the type log or drag the formation tops to the desired position required for correlation.



Fault Polygons and Unconformity Intersections Display

From the **Data Panel 2D/Map Tree** pane of smartSECTION, turn on or off all the fault polygons and/or intersections associated with a particular displayed surface. The options are available in the context menu of Correlations/Unconformities.

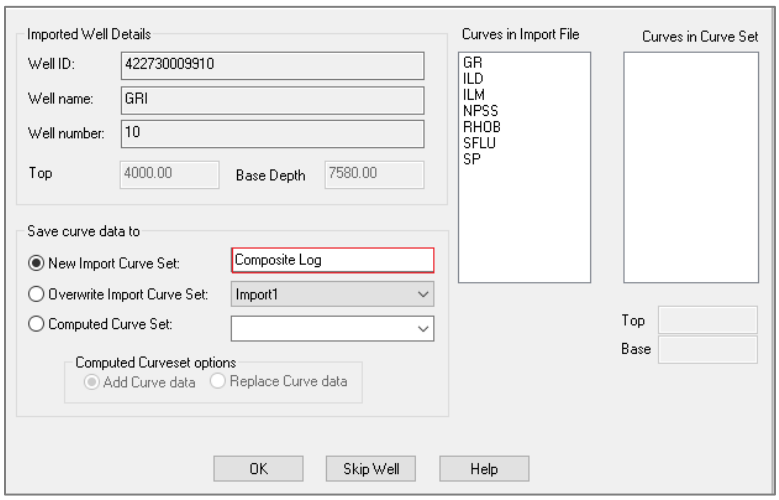


PRIZM

This section describes the updates made in PRIZM.

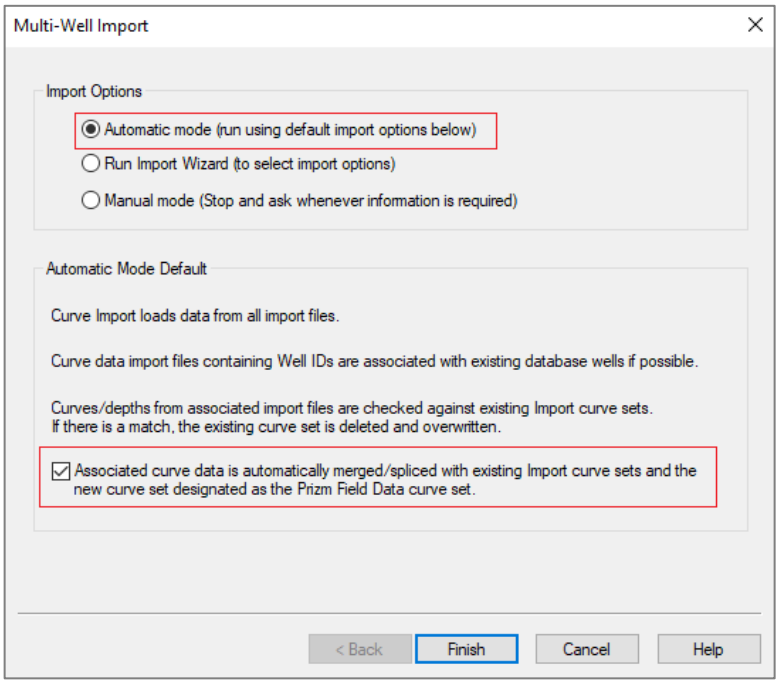
Custom Titles of Curvesets

While importing curvesets, you can enter a custom name for the first curveset in a single well to any curveset name, to better describe what the data file contains.



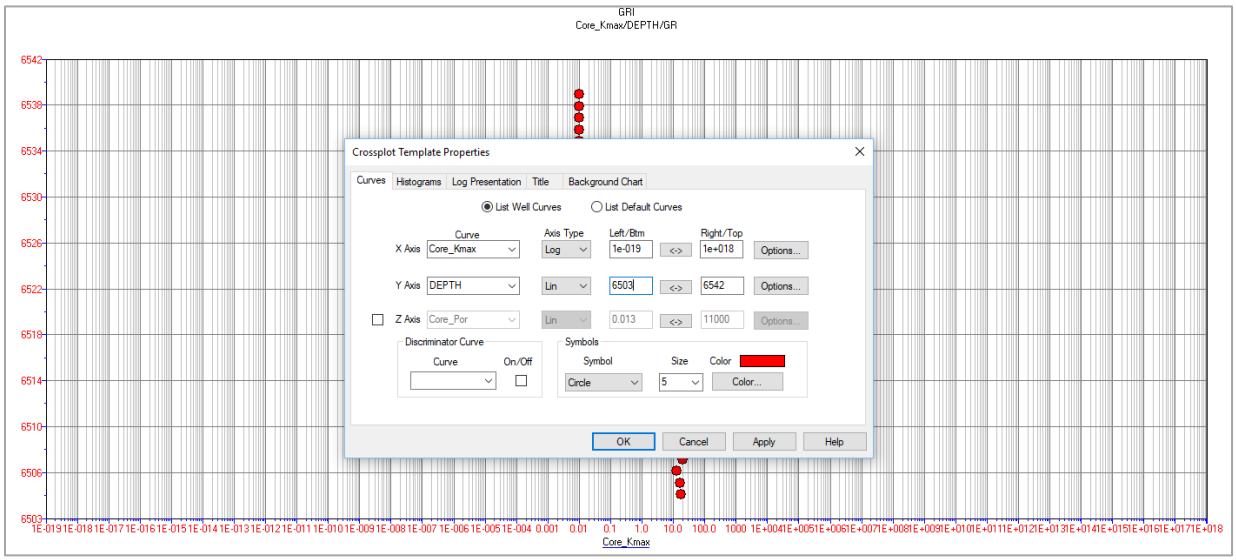
Selective Merge/Splice of Curvesets

In the Automatic mode of Multi-Well Import, you can choose to prevent the automatic merging/splicing of all curve sets during import, and later merge or splice only the required curves and curve sets.



Small Permeability Crossplot Values

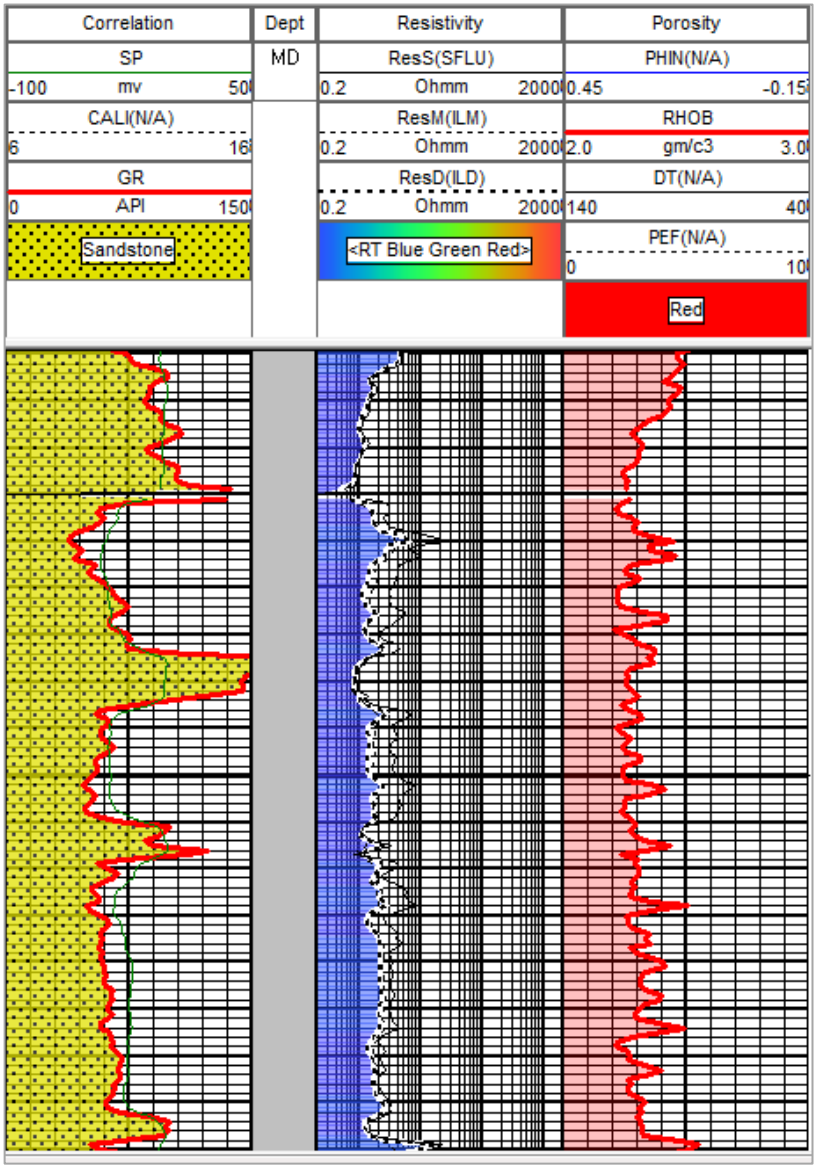
Set the values of crossplot axes to display small permeability values to allow for comparison to plots with smaller values. Choose **Edit >> Crossplot** or click the **Edit Crossplot** button on the Crossplot toolbar to display the **Crossplot Template Properties** dialog where you can set the desired values for axes.



Lithology Fill Transparency

Adjust the transparency level of the lithology fill to view what is behind the fills on the presentation log.

Choose Edit >> Area Fills, or click the **Edit Areas** button  on the Log toolbar, to access **the Log Template Properties** dialog where you can specify the area fill transparency settings.



Import and Merge Curves

Import new curves and merge them into an existing computed curves set instead of replacing them, and use the new curves in petrophysical analysis. From the **Existing Curve Data for File** dialog, choose the **Add Curve data** option to add and merge the curve set data with the existing computed curve set data.

Customization of Well ID Format

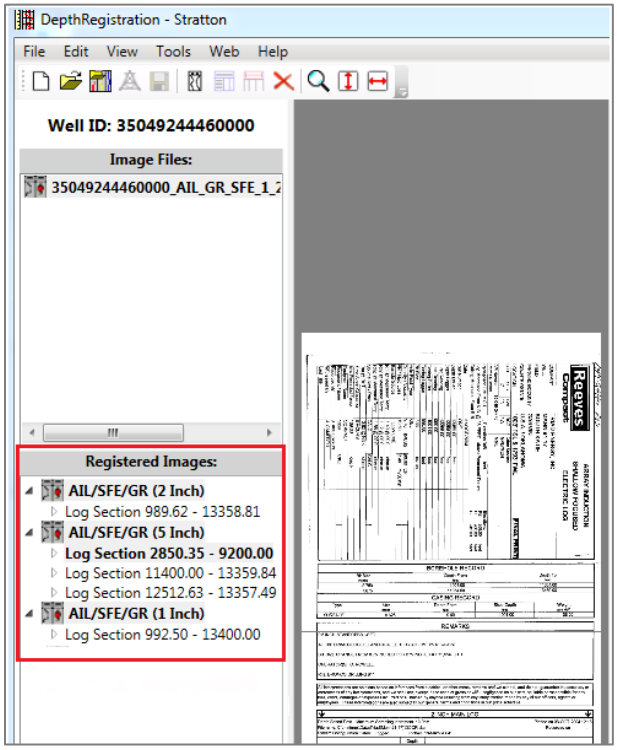
While importing curves, you can choose to strip-out the dashes (-) in a Well ID in order to get the API in an LAS file that contains dashes to match the wells in WellBase without dashes.

DepthRegistration

This section describes the updates made in DepthRegistration.

Display Log Scale with the Log Name

Differentiate between logs based on their scale that displays with the name of each log after it is imported. The log name along with the log scale is listed in the **Registered Images** section of **DepthRegistration** window.



QueryBuilder

This section describes the update made in QueryBuilder.

Log Data Filters Display in Alphabetical Order

The curve and raster filters display in alphabetical order in the **Log Data Filter** dialog.

WellBase

This section describes the update made in WellBase.

Accessing Strat Columns

The **Strat Column** drop-down list has been added to the **Calculate Formations** dialog. Formations can be calculated using both public and user-defined strat columns.

GeoAtlas

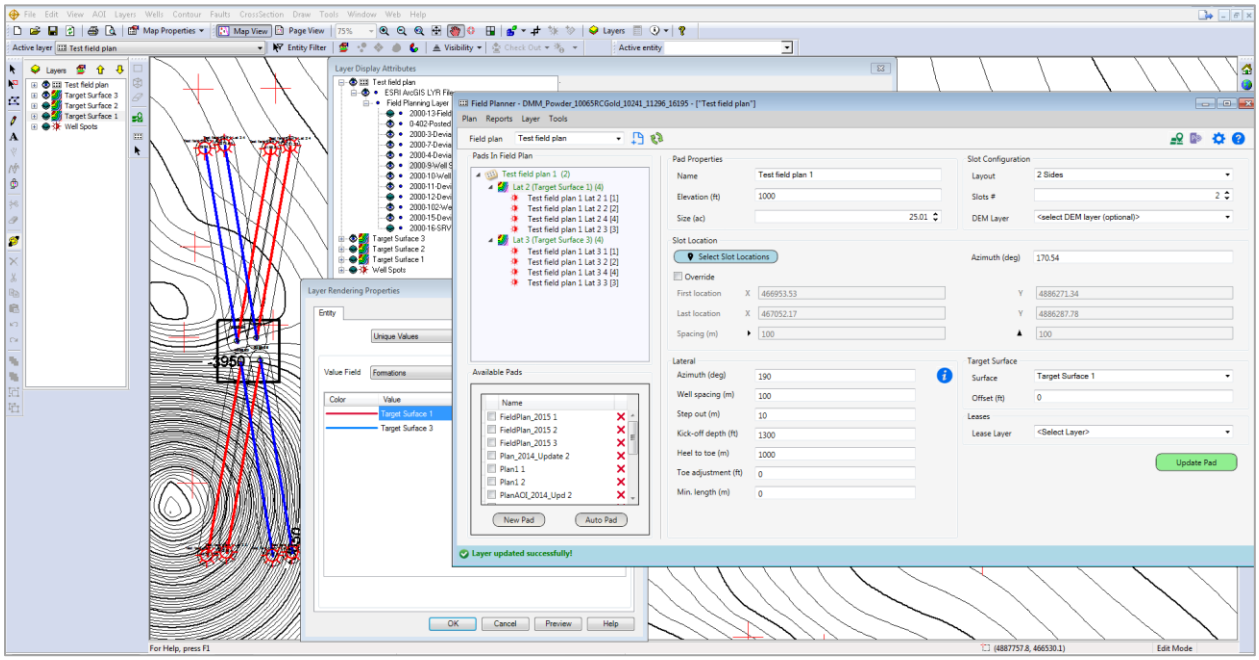
Support has been added for ESRI ArcEngine 10.4.x and 10.5.

Field Planner

This section describes the updates made in Field Planner.

Thematic Coloring of Different Payzones

Set different colors for well sticks for multiple formations in a single field plan.



DLS Values Stored in Field Plans

DLS values from GVERSE™ Planner are available in the field plan. To view the DLS values, open the activated project, and then open the AOI folder in which field plan has been created. Click on the *FieldplanName.xml* file to view the field plan information.

```
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```

Editing Pad Polygons

Creating a polygon with well pads, and then further editing the polygons with Node Display/Edit option, saves and conserves the edited polygon shape in the database.

Well Selection Improved

Select wells by simply clicking on them. Previously, wells could only be selected using the context menu.

Decimal Points for Azimuth Values

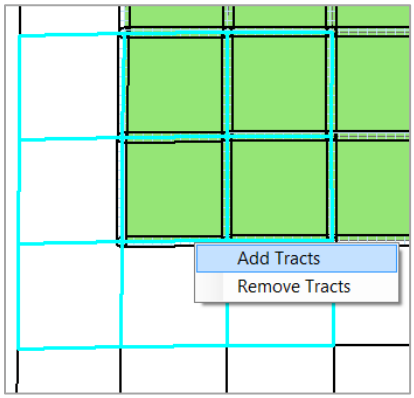
Azimuth values can be specified up two decimal places.

Lease Planner

This section describes the updates made in Lease Planner.

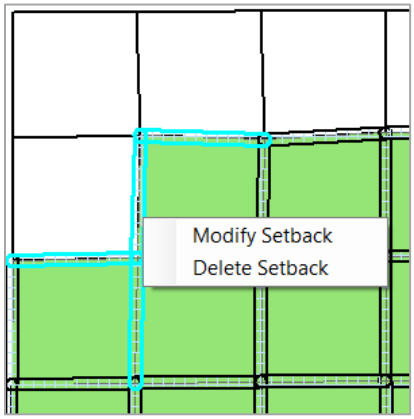
Adding or Removing Multiple Tracts

Select both pre-existing and new tracts in a single selection, and add or remove tracts with multiple selections using the context menu.



Modifying or Deleting Setbacks

Setbacks can be modified or deleted using the context menu.



Setbacks within Tracts

Setbacks can be included within tracts in the lease layer, for a legally safer user experience.

Shape File Location

The disk location of the imported shapefile displays in a tooltip on hovering over the shapefile name in the **Map** control tree.

Lease Area Color

Lease Area color is modified to make it more user friendly.

Fixed Issues

The following customer reported issues were fixed in this release.

Icons display correctly in dialogs such as the Layer Selection dialog when displayed in Windows 10 machines with high-resolution displays" Previously, a black background used to displays behind the icons.

PRIZM

ID	Description
54437	Added a limit of 15 characters for the curve name. Previously, the area fill displayed incorrect text in the header if the curve had more than 15 characters.
148647	Fixed the cross plot image serialization. Previously, if discriminator curve was enabled, the background image did not save with the template.
144512	Added a check to skip the curve during import if all its values are null. Previously, log curves having null values in the totality of their depths were also imported in Prizm.
42330	Replaced original colors dropdown control with MFC Color control for more color choice and selection. Previously, only a selected number of colors were available to choose from.
126979	Adjusted the Formation Top combo box size to display complete formation names. Previously, long formation names were truncated which made it difficult to distinguish between similar names.
73024	Defined the character limit for curve names. Previously there was no warning message when user exceeded the curve name character limit.

XSection

ID	Description
122139	Updated image in the XSection help file to display the Load All Layers option.

DepthRegistration

ID	Description
144514	Included Vertical Scale label in the log section name to identify different logs based on their scale.

smartSECTION

ID	Description
12539	Type Log functionality that was previously available in XSection is now implemented in smartSECTION.
141275	Object is properly disposed and velocity model related files no longer pile up on the disk. Previously, TMP files were created on opening cross sections but were not deleted on closing them.
27713	Added the ability to limit the data interval over which UDE or PEM is run. Previously, the depth interval over which a UDE or PEM was executed was not honored and the results were incorrect.
129869	Improved deviated templates rendering code to prevent overlapping of regions in deviated wells due to the stretching and squeezing of template bitmaps.
144496	Shipped correct version of Xceed DLLS with installer. TGS connectivity for data downloads was not working for 2016.1 release.
129868	Improved PRT Templates rendering code. Previously, noise was observed for templates having lithology fills in deviated wells cross sections.

SeisVision

ID	Description
147910	Re-adding wells and formations in an interpretation with hidden wells no longer results in application crash on save.
147913	Re-adding all wells and formations after saving an interpretation no longer results in application crash on saving the interpretation again.

GeoAtlas

ID	Description
125821	Volume calculations for boundary and clipping polygons are calculated correctly.

QueryBuilder

ID	Description
2345	The results in the query builder are sorted in descending order.

WellBase

ID	Description
145235	The performance of WellBase and ZoneManager is improved for projects with protected well data.
142035	The borehole latitude and longitude values are saved correctly after applying a transformation.
133511	The formation calculation performance is significantly improved.
132767	The transform coordinate feature works correctly for projects with Easting & Northing as database coordinates.
129628	Quick filters take less time while activated in WellBase.
127083	The data export using an ASCII 4 file is faster.
126824	Locating a well using the Find tool is much faster.
122889	Performance scrolling through WellBase is improved.
119634	The data for county fields for Texas displays accurately after importing IHS 297 into a new project.

Architecture

ID	Description
133968	Icons display correctly in dialogs such as the Layer Selection dialog, when displayed on Windows 10 machines with high-resolution displays. Previously, a black background used to display behind the icons in some dialogs.

Known Issues

This section lists the known issues in this release.

WellBase

ID	Description
120598	Manually entered values for Easting and Northing of BH are not calculated properly in projects with Easting/Northing as database coordinates.
124285	The country name displaying in the Scout ticket view and the list view is different for the same wells.
145150	The error "Incorrect field name or field index" displays after launching two Information Manager windows from WellBase and applying a filter.

GeoAtlas

ID	Description
138443	In some scenarios, the datum does not shift after applying a transformation.

Field Planner

ID	Description
106883	A runtime error generates on creating a field plan layer.

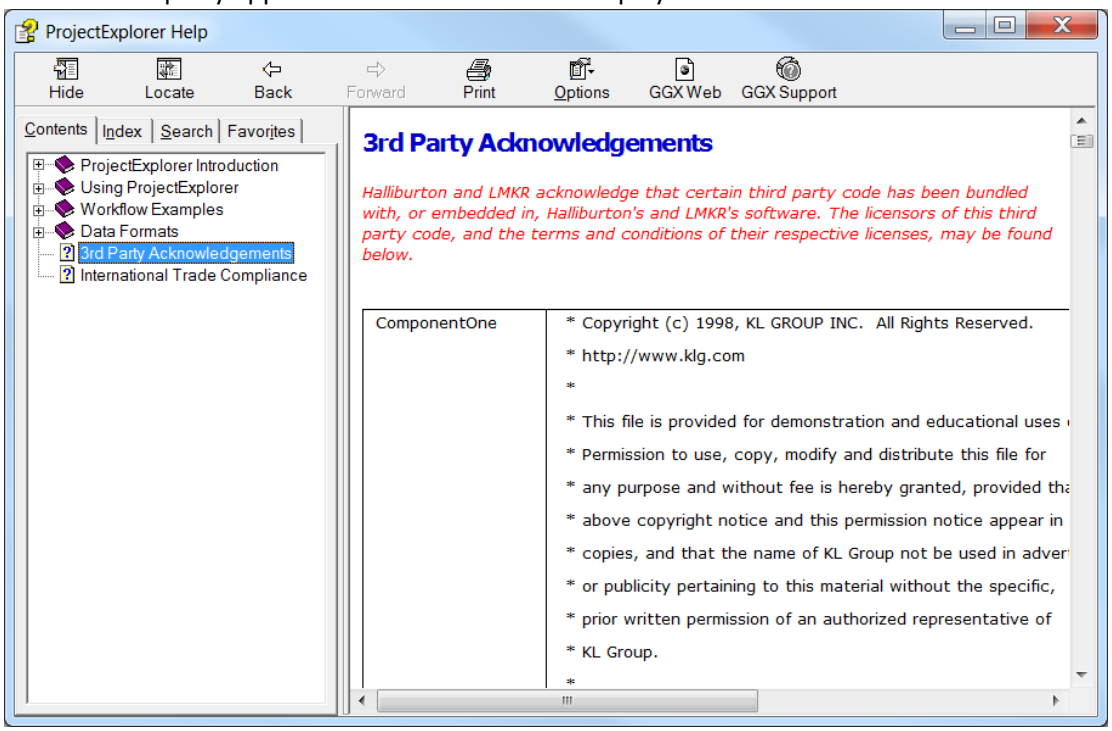
Third Party Applications

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.



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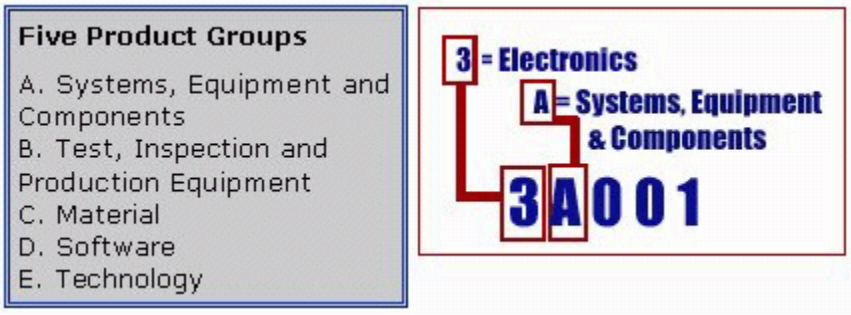
The ECCNs provided here represent LMKR's opinion of the correct classification for the product today (based on the original software and/or original hardware). Classifications are subject to change. If you have any questions or need assistance please contact us at support@lmkr.com.

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, 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 home page	http://www.lmkr.com
LMKR Support Portal	http://support.lmkr.com