



Title | ***GeoGraphix® 2015 Release Notes***

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- Introduction..... 3
- System Requirements..... 5
 - GeoGraphix Workstation & Laptops..... 6
 - GeoGraphix Workstation (continued)..... 7
 - GeoGraphix Project Server..... 8
 - Compatibility Table..... 10
- New Features..... 11
 - smartSECTION..... 11
 - Advanced 3D visualization (Pro 3D)..... 14
 - Field Planner..... 17
 - SeisVision..... 18
 - DepthRegistration..... 21
 - PRIZM..... 23
 - GeoAtlas..... 24
 - WellBase..... 24
 - ZoneManager..... 25
- Fixed Issues..... 26
- Known Issues..... 29
- Third Party Applications..... 30
- International Trade Compliance..... 31
 - Definitions..... 32
- Contacting Technical Support..... 33



Introduction

LMKR is pleased to announce the release of the GeoGraphix® and Discovery™ on OpenWorks® 2015 software.

This release contains many new features for GeoGraphix in several applications, which are highlighted in the New Features section of this document. In those applications and other GeoGraphix applications (which did not have new features) significant defects were fixed, as noted in the Fixed Issues section. This guide provides important information regarding new improvements, system requirements, and valuable resources that will allow you to get the most out of the GeoGraphix 2015 release. The GeoGraphix 2015 release contains the 2015.0 version of GeoGraphix software.

Note: The GeoGraphix 2015 release is a license-control release that requires a new license file. In addition, 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 2015.0 software. See the “LMKR Licensing” section of the Installation Guide for Release 2015 for more information.

To go directly to the new features, defect fixes, known issues and system requirements for the GeoGraphix applications, click on the blue links below:

- [New Features](#)
- [Fixed Issues](#)
- [Known Issues](#)
- [System Requirements](#)

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 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:

GeoGraphix Pro is a new upgrade option that provides geoscientists with advanced technologies to enhance their productivity and maximize their existing GeoGraphix investment. GeoGraphix Pro is a licensed upgrade to the GeoGraphix software and requires the purchase of a separate license.

For Release 2015, these include:

- **Advanced 3D visualization (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 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 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.

System Requirements

On the following pages, you will find hardware and software system requirement tables 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 2015 release is a license-control release that requires a new license file. In addition, 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 2015.0 software. See the “LMKR Licensing” section of the Installation Guide for Release 2015 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 & Laptops

Operating System Requirements		
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

Notes

Note 1 – We recommend using the latest Microsoft service packs and security patches.

Graphics Hardware Requirements		
Application Support Level	Required Operating System	Required 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

Notes

Note 1 – 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. We recommend using the latest video drivers and MS updates for your system.

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.



GeoGraphix Workstation (continued)

Optional Software Requirements	
For spreadsheet import utility in WellBase, SeisBase, and LeaseMap	Excel 2007 or 2010 (32-bit or 64-bit)
For 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)
For 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 3 rd 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.
For TracPlanner Xpress in GeoGraphix	WellPlanning for GeoGraphix 2015.0 (contained within the DecisionSpace 5000.0.3.0 installation, which is available on the Landmark LSM). Oracle Express Client or Oracle 10g Client 10.2.0.4 (32-bit)

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.

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

Operating System Requirements		
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
Notes		
Note – We recommend using the latest Microsoft service packs and security patches.		

Additional Requirements and Recommendations

- DVD-ROM required for media installation. Download installation available.
- 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 LMKR Technical Support Solution Document KBA-65218-F9D7D5.

Compatibility Table

Discovery on OpenWorks

OW License 5000		DOW License 5000.02							
GeoGraphix Version		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
OpenWorks Version	OW 5000.10.1.05	R							
	OW 5000.8.3.01	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

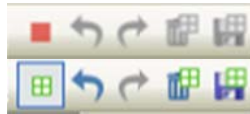
This section contains a brief description of the exciting new features included in the 2015 release.

smartSECTION

The 2015.0 release of smartSECTION includes the following new features:

Quick Picks Toolbar

A new Quick Picks feature has been added to the current release of smartSECTION cross section that enables the user to quickly make surface picks on selected formations and save these changes manually. This feature has enhanced the performance of smartSECTION and the surface picks application tool by delaying the updating of the model until the Quick Picks are saved.





Pro 3D Toolbar and smartSECTION Integration, Rectangular Regions, and Camera Icon

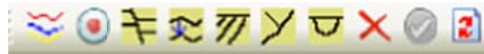
The Pro 3D tool can now be accessed through smartSECTION by creating rectangular regions in the Map View, and viewing the delineated areas in 3D. The rectangular region drawing tool and camera icon are also new features and part of this release.




Batch Update mode and Update Model command

These features have been added to the GeoSurface Model Properties toolbar. The Batch Update mode

tool  allows the user to delay the implementation of the 3D modeling tools used, and manually update the changes saved using the Update Model button .

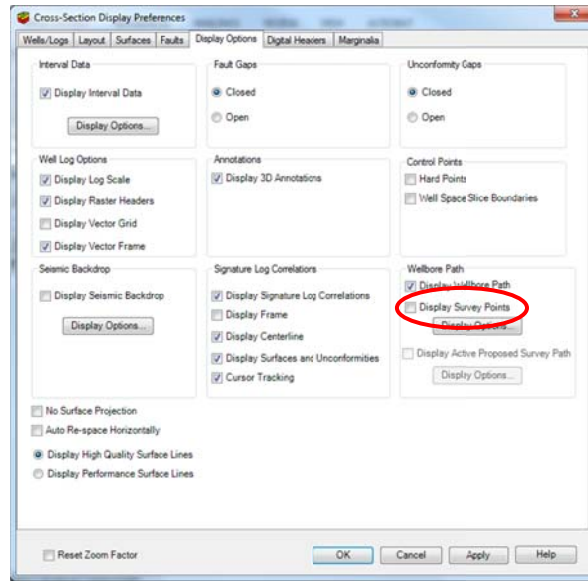


Update Velocity Model button

The Update Velocity Model tool  allows the user to manually update a velocity model created in SeisVision using interwell points. This tool can be found on the Surface/Fault/Interval toolbar in the Cross Section View of smartSECTION.

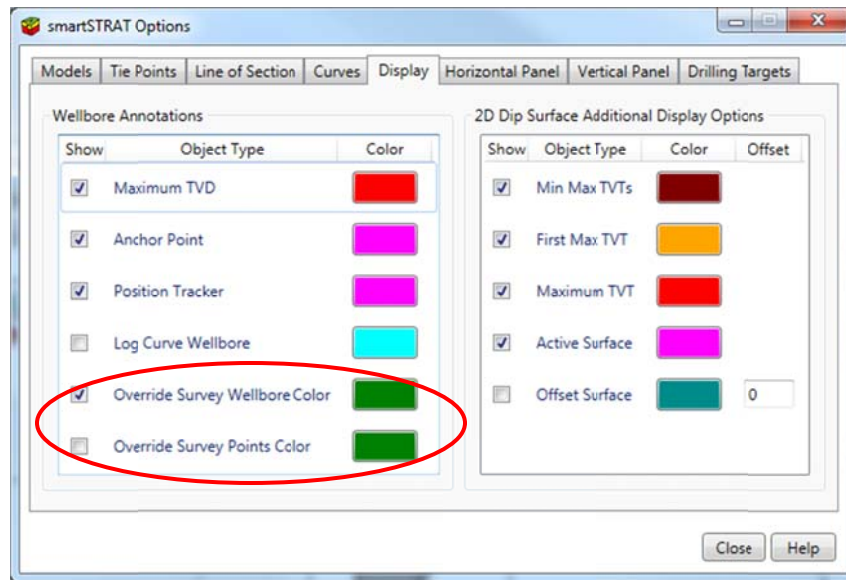
Display Survey Points check box added to Display Options tab of Cross Section Display Preferences

This new functionality has been added to enable the user to display and annotate the Survey points of a well along a wellbore path or drilling well.



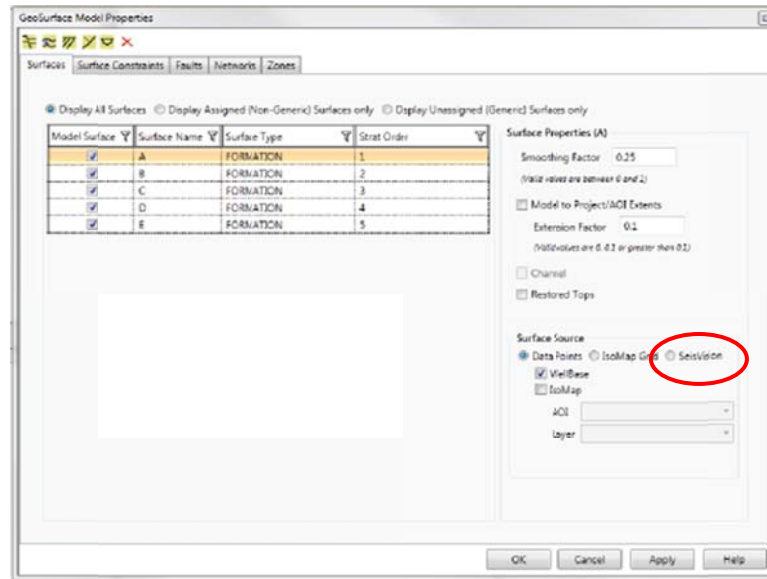
Override Survey Wellbore Color and Override Survey Points Color options added to Display tab of smartSTRAT dialog box

Two new options have been added in the Display options tab of the smartSTRAT dialog box to enable the user to override survey wellbore color, and survey points color.



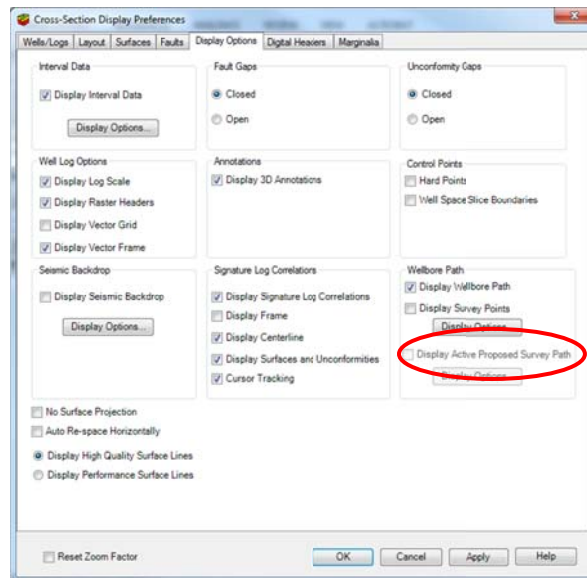
SeisVision radio button added to the Surface tab of GeoSurface Model Properties dialog box

A new radio button has been added to the Surface tab of the GeoSurface Model Properties dialog box to enable the user to directly create a selected surface from a SeisVision horizon using the active velocity model.



Display Active Proposed Survey Path check box added to Cross Section Display Preferences - Display Options Page

A new check box has been added to the Wellbore Path group box in the Cross Section Display Preferences Display Options Page that provides the user the option to display the active proposed survey of the relevant well.



Mouse wheel to pan option added in cross section and Map View

An option has been added to smartSECTION for the user to use their mouse wheel to pan along the cross section and Map View panes.

GeoSurface Model Properties dialog box modified

The GeoSurface Model Properties dialog box has been modified by introducing more user friendly methods for applying surface constraints, surface filters, and adding or removing zone layers.

Common XML file format .ssdx introduced

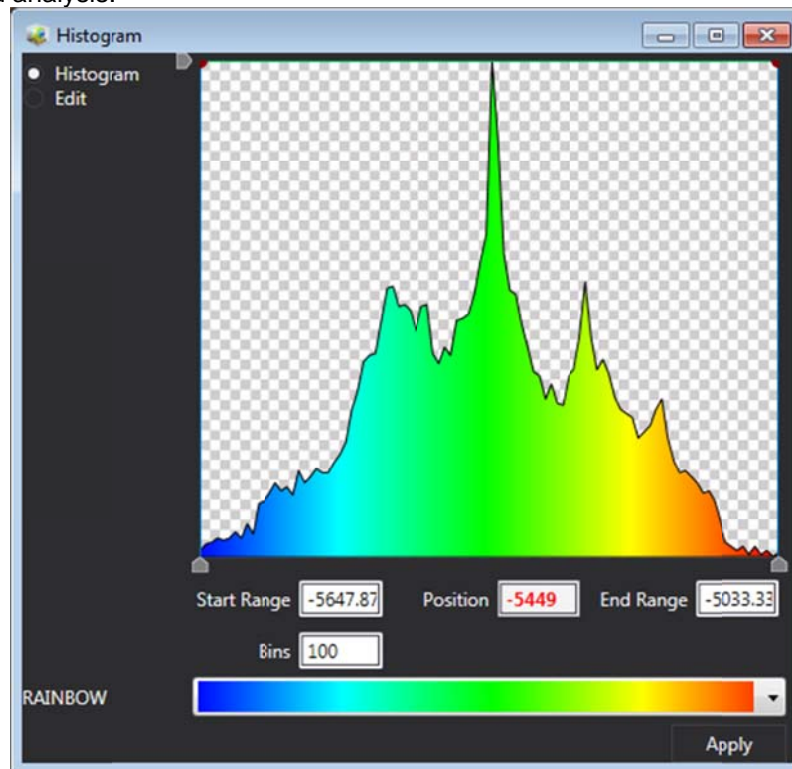
In this release, a new common XML file format has been introduced for the user to access cross sections from smartSECTION. When a .ssd file is launched in smartSECTION, it is automatically converted to .ssdx format. A backup folder is automatically created within the project folder that contains the cross section opened in its previous .ssd format. Any new cross sections created will be only be saved in .ssdx format. Similarly, .sst files are saved as .sstx files, while the old .sst files are stored in a backup folder.

Advanced 3D visualization (Pro 3D)

The 2015.0 release of advanced 3D visualization (Pro 3D) includes the following new features:

Histogram Control

In this release, you will be able to use a histogram to limit the colors that are shown in the seismic section and surfaces for a detailed analysis.

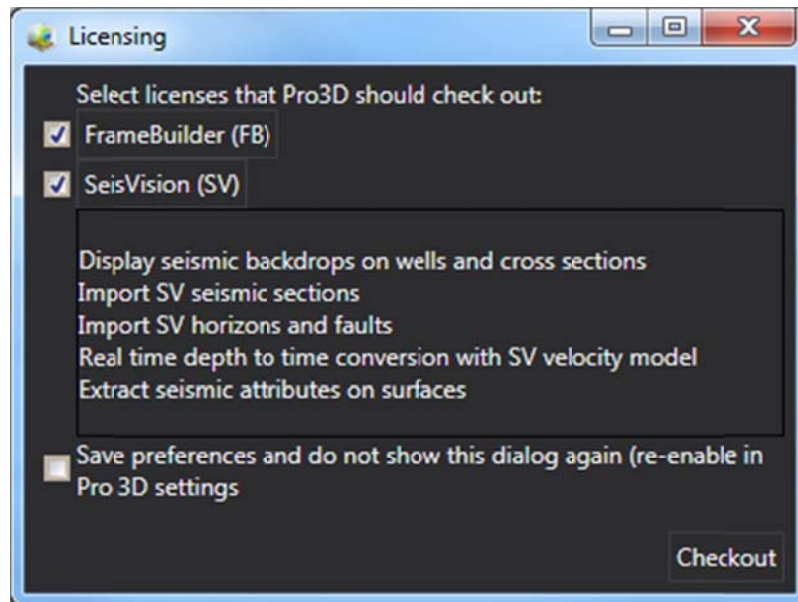


smartSECTION Cross Section in 3D Scene

In this release, you can view your smartSECTION cross sections in a 3D Scene within advanced 3D visualization (Pro 3D).

Pro 3D Licensing

In this release, the Licensing dialog box has been introduced which lets you select the licenses you want Pro 3D to use.



Well Planner Target Points in Pro 3D

In this release, the target points (surface hole location, kickoff point, landing point, and bottom hole location) in Well Planner are displayed in 3D Scene as blue nodes.

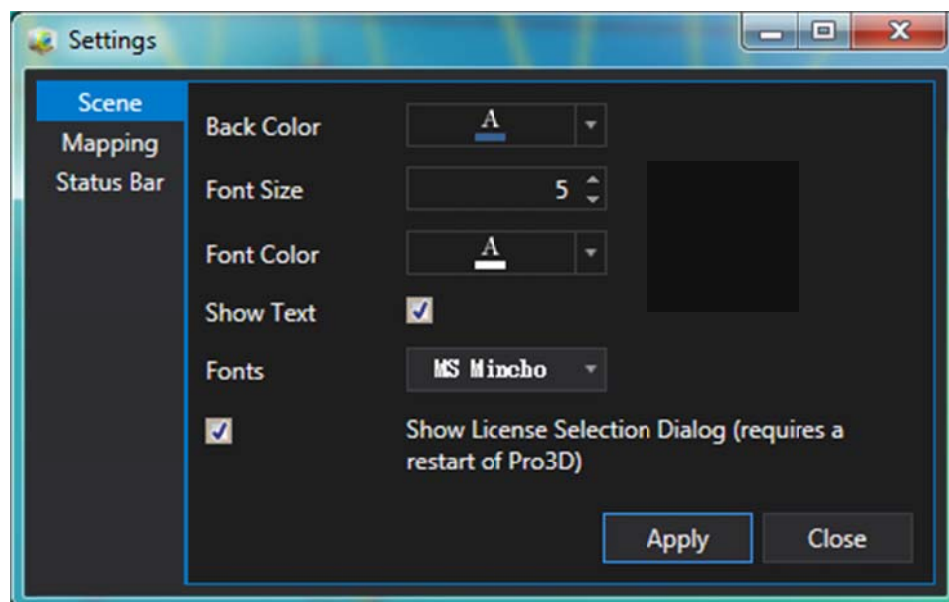
Improved Status Bar

This release has introduced a more interactive and informative status bar.



Settings Dialog Box

Advanced 3D visualization (Pro 3D) now has a Settings dialog box. You can use this dialog box to adjust the settings for a Scene, Mapping, and/or the Status Bar.



Improvements in Camera Movement, Cursors, and Scene Icons

The advanced 3D visualization (Pro 3D) camera movement and cursor controls have been improved and enhanced to make them more user-friendly. Advanced 3D visualization (Pro 3D) has also improved the Scene icons to make them more understandable.

Improved Toolbar

In this release, advanced 3D visualization (Pro 3D) has introduced an updated toolbar, making the application user friendly.



Save Layer Selection

From this release onwards, your last selections will be saved.

Don't Show Items in Tree If They Have Zero Count

In Properties Pane, the folders with no items will not be shown in the tree.

Animation Toolbar

This new feature animates seismic sections, inlines, crosslines, and time/depth slices in the 3D Scene.



Change Pro 3D Region Select Cursor to Crosshair

From this release forward, when you click on the region select box, the cursor changes to a crosshair to indicate that you should select a region.

Updating and Syncing With Different Applications

From this release forward, advanced 3D visualization (Pro 3D) has been synced with XSection, Field Planner, and Well Planner. Now, when any of these applications are updated, the view in the Pro 3D window will be updated as well.

Show Zone Manager Attributes

In this release, you can see ZoneManager attributes visually in the Pro 3D window as bubbles around a well.

Multi Select and Remove All

From this release forward, you can now remove multiple items in the Region Items Pane tree. In addition, you can also click on a group header item (such as **Seismic**) and remove all the items beneath it.

Sending Well Info from Pro 3D to Other Applications

From this release forward, you can share data between different applications of GeoGraphix, such as data from advanced 3D visualization (Pro 3D) to WellBase, PRIZM, GeoAtlas, XSection, smartSECTION, DepthRegistration, or ZoneManager.


Display Production

From this release onwards, you can see the WellBase production data as pie-charts in Pro 3D.

Show smartSECTION's FrameBuilder Surfaces

In this release you can now see the smartSECTION's FrameBuilder surfaces to update your live geomodel on the fly in Pro 3D.

Measure Distance Tool

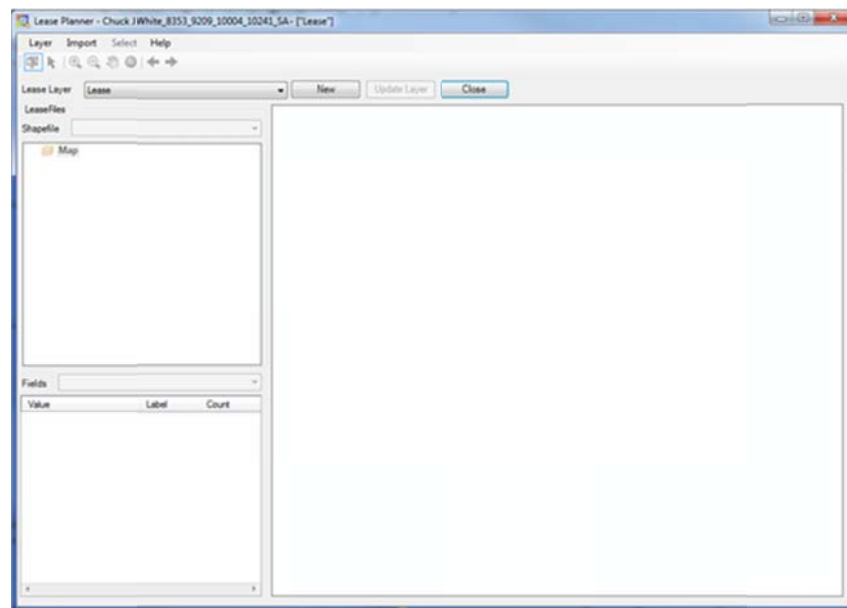
The Measure Distance tool  can be used to calculate distance between two or more points on items in the 3D scene so that you can measure distances between perforations, tops and bottoms of zones of interest, etc.

Field Planner

The 2015.0 release of Field Planner includes the following new features:

Lease Planner

In this release, you can now integrate lease boundary layers with maps in GeoAtlas so that you can easily select tracts and leases on acreage and apply setbacks to drilling.



Identify and Avoid Existing Vertical Wells as Hazards to Well Placement

In this release, you have an option that allows you to factor subsurface hazards into well placement (such as existing wells in the area) to reduce the risk of well collision.

Specify Negative Step Out For Planned Wells

In this release, you can now specify a negative step-out value, so that the surface spot location lies between the well's landing point and bottomhole location and you can maximize the SRV per well.

Plot Well Stick Target Points

In this release, you can now move target points for well sticks generated in Well Planner on the field planning layer in order to plan wells that avoid subsurface hazards or optimize the producing acreage.

Stimulated Reservoir Volume (SRV) Bounds

In release 2015.0, you can drag a bounding box "template" around the map that estimates the Stimulated Reservoir Volume (SRV) while planning, so you can visually plan pad locations with respect to other pads in the vicinity.

Specify Pad Size

In the latest release, you can specify the area of pads you create in Field Planner, so that a pad may contain

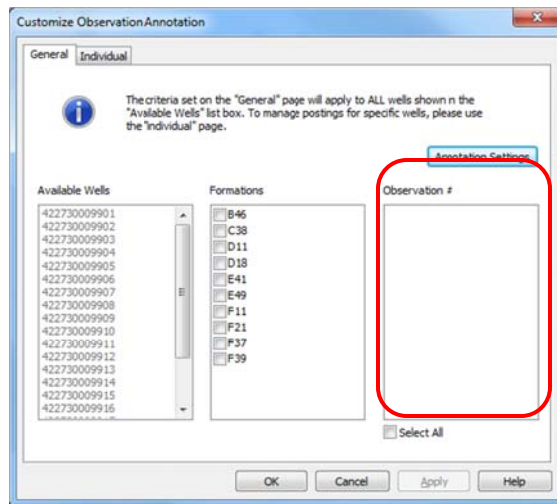
sufficient acreage to accommodate trucks and equipment.

SeisVision

The 2015.0 release of SeisVision includes the following new features:

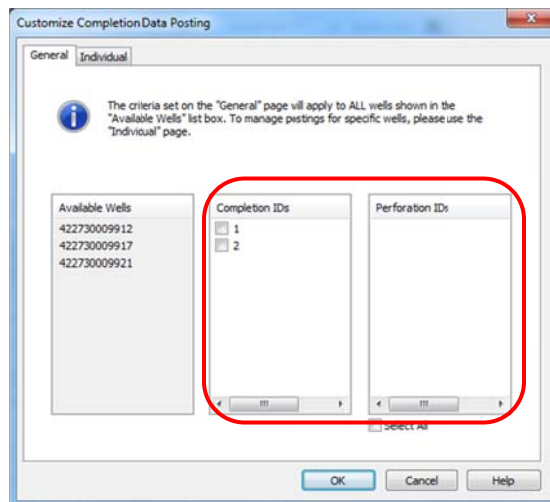
Multiple Formation Observation Number Posting

The new Customize Observation Annotation dialog box enables the posting of multiple observation numbers of formations along the wellbore on vertical seismic displays in SeisVision. The selected posting options may be applied to all wells or managed for each well individually.



Specific Well Data Posting on a Vertical Seismic Line

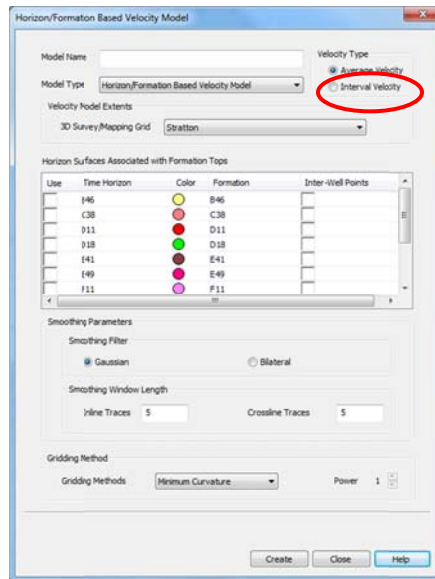
In addition, the new Customize Completion Data Posting dialog box has been designed to facilitate the posting of selective completion data along wellbores on a vertical seismic section. Using this functionality, you will be able to select specific Completion and Perforation IDs to display along the wellbore on vertical seismic displays in SeisVision. The posting options may be applied to all wells or managed for each well individually.



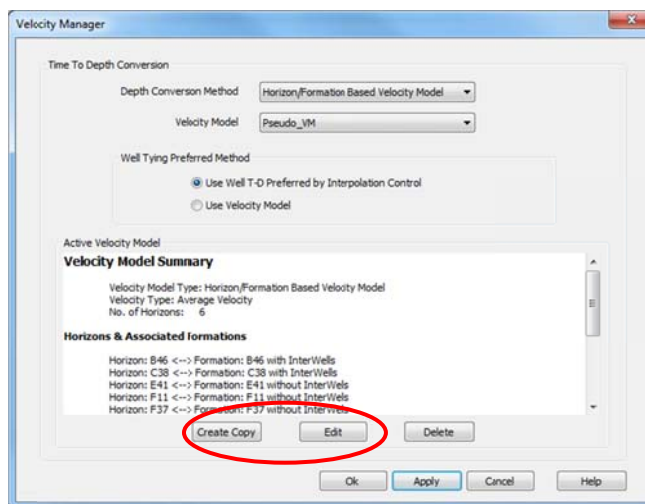
Dynamic Depth Conversion (Velocity Modeling)

Velocity Modeling has been improved in this release.

- While creating/updating of a velocity model, you can now use Interwell Points, which are manually added in smartSECTION and smartSTRAT. The velocity model is updated “on the fly” using those Interwell Points.
- An Interval Velocity option now has also been enabled for a Horizon/Formation Based Velocity Model.

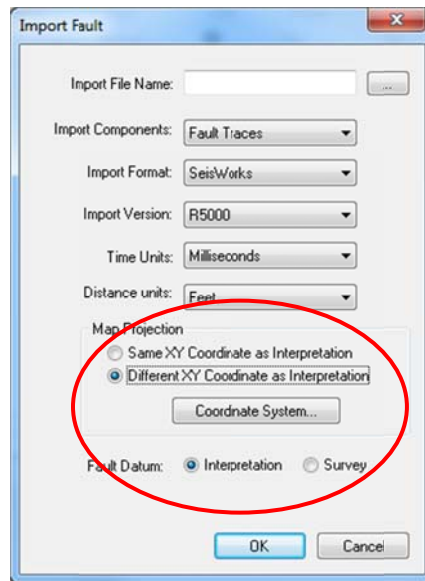


- You can now edit and copy your velocity models in the Velocity Manager. The Edit button allows you to change the model definition of an existing velocity model, instead of having to create a new model from scratch. The Create Copy button allows you to create backup copies of existing velocity models.



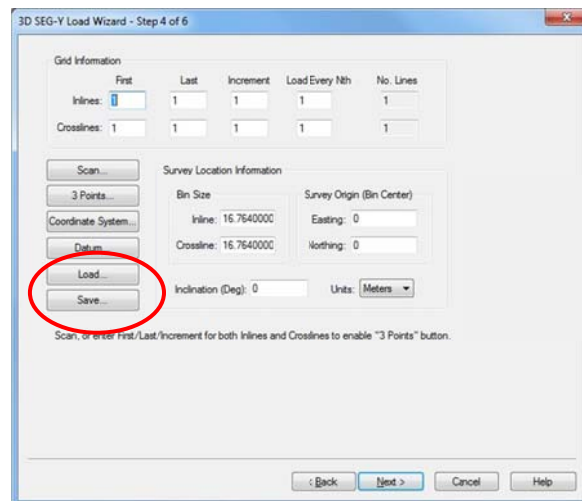
Datum and Map Projections Handling while Importing Faults

Now you can specify the datum and map projection when importing faults.



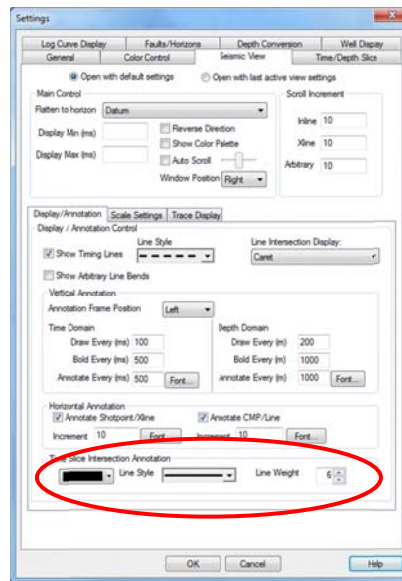
Save and Load Grid Information in SEG-Y Load Wizard

Two new buttons have been added to the SEG-Y Load Wizard to load and save grid parameters. Now you can simply load the already saved parameters, instead of typing while loading multiple SEG-Y files of the same survey, thus eliminating the chances of error.



Time Slice Intersection Annotation

Now you can enhance the display of time slice intersections on seismic sections using the new parameters introduced in this release.



Layer Selection Tool

Layer Selection is now available on the Display control toolbar, streamlining the overall workflow in SeisVision..



Delete Values in SEG-Y Load

You can now delete the numeric field values with standard Windows® behavior in the SEG-Y Load Wizard.

Amplitude Readout

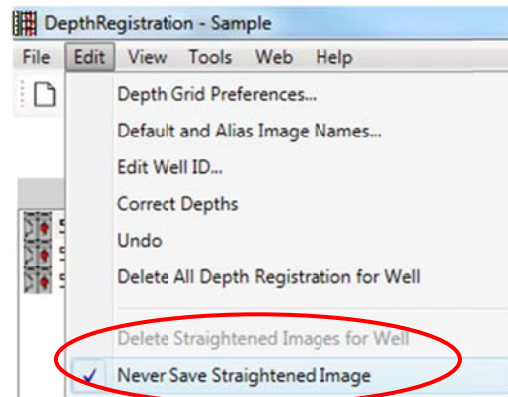
The readout of amplitude surfaces now shows at least 2 decimal places in the Status Bar. If the amplitude surface value lies within the range -1 to 1, the readout's precision is 4 decimal places; otherwise, the precision is 2 decimal places.

DepthRegistration

The 2015.0 release of DepthRegistration includes the following new features:

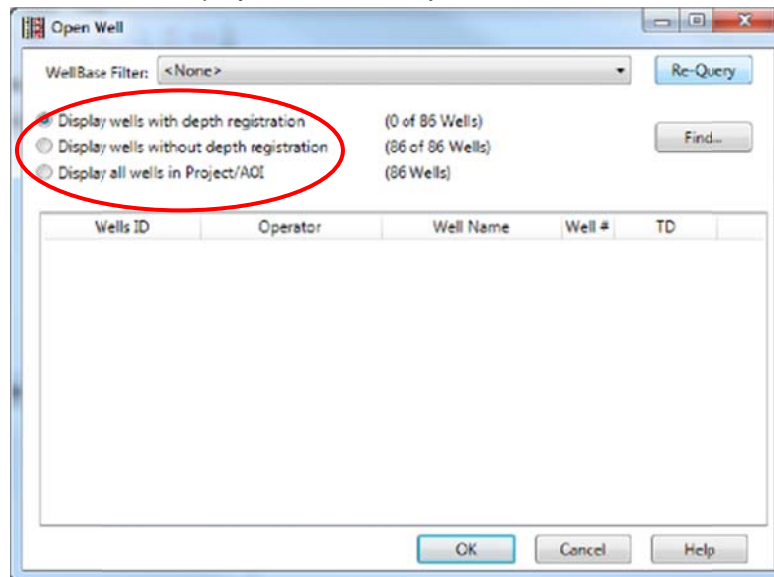
Undo/Delete Straightened Images

The user now has the option to delete straightened images from the application interface. The functionality encompasses two options: “Delete Straightened Images for Well” and “Never Save Straightened Image”, details of which are explained in the corresponding help section.



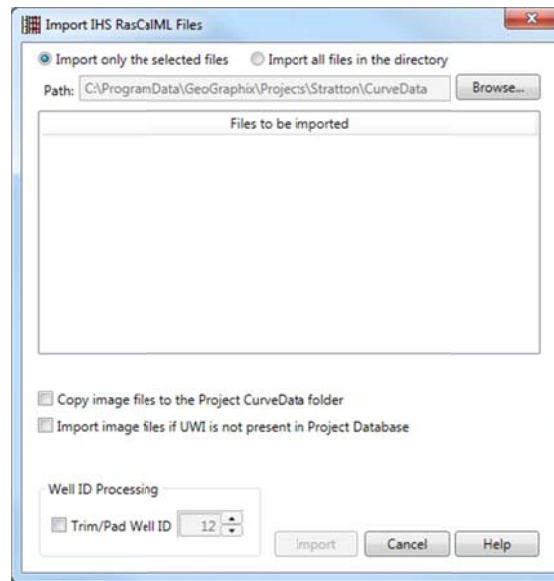
Radio Buttons added to Open Well dialog box

Three new radio buttons have been added to the Open Well dialog box that now give the user the option to filter and display wells from the three options to Display wells with depth registration, Display wells without depth registration, and Display all wells in Project/AOI.



IHS RasCaIML (.xml) Import

IHS RasCaIML (.xml) files can now be loaded into DepthRegistration. The rasters are displayed in XSection, smartSECTION, or PRIZM.



Import Image Files if UWI is Not Present in the Project Database

A feature has been added to the Depth Registration Import process whereby you can choose to either add wells with UWIs that are not present in the database or have the import ignore wells that are not already in the database. The Import file formats with this feature include: GGX (DRA files), MJ systems (REG files), TGS (SIF files), Petra (LIC files), and IHS RasCaIML (XML files).

PRIZM

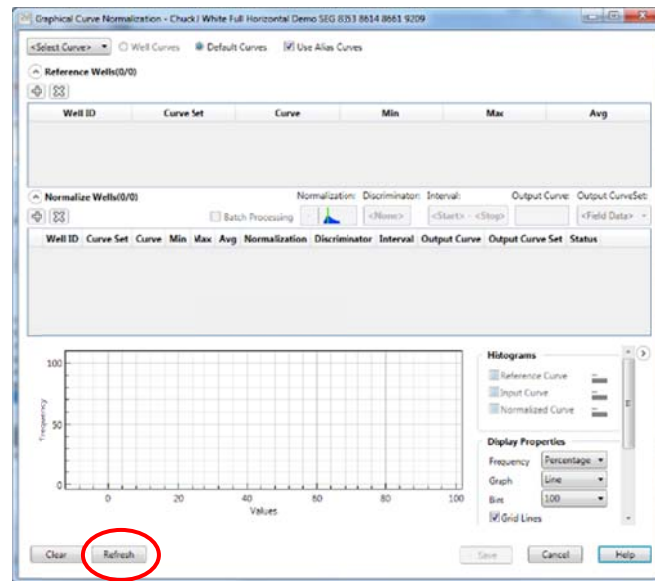
The 2015.0 release of PRIZM includes the following new features:

DLIS (.dlis) Import

Digital Log Interchange Standard (DLIS) curve files can now be imported into PRIZM in a .dlis format using the DLIS (.dlis) Import functionality. This release only supports single-value curves.

Graphical Curve Normalization Refresh Button

A new button has been added to the Graphical Curve Normalization dialog box commands. The user can use this button to refresh the loaded data in the Graphical Curve Normalization dialog box.



Equations Added to Edit User-Defined Equations Dialog Box

In this release, the Brittleness and M&N equations have been added to the Mechanical and Matrix Identification options, respectively, on the Standard Equations tab.

Ternary Scale Crossplot Button

A new button for Ternary Scale crossplot has been added to the Annotations toolbar that allows the user to plot a ternary scale on a selected crossplot.



GeoAtlas

The 2015.0 release of GeoAtlas includes the following new features:

Field Planner Layer Sent to Satellite Viewer

In this release, you can send Field Planner layers to Satellite Viewer to determine Field Plan more clearly.

Upgrade to ArcObjects 10.2.1

From this release, the GeoGraphix is compatible with ArcObjects 10.2.1.

Upgrade to Bluemarble 7.0

From this release, the GeoGraphix is compatible with Bluemarble 7.0.

WellBase

The 2015.0 release of WellBase includes the following new features:

Honor Protected Fields in Excel Spreadsheet Data Loader

From this release onwards, bringing data into your project using the WellBase Spreadsheet Import tool will honor the Data Protect setting and protected data will NOT be overwritten.

Display Well Pads and Deviated Well On Google Earth

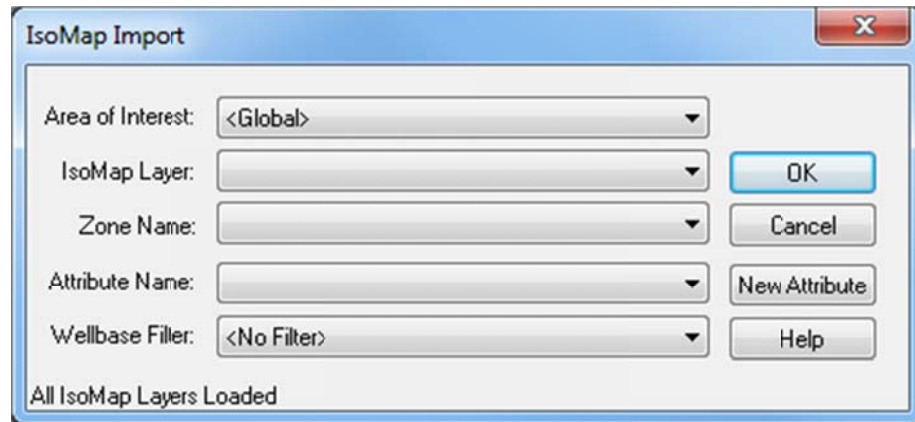
In this release, you can see the well pads and entire deviated wellbore on the map display in Google Earth to determine the bottom hole location of the well more clearly.

ZoneManager

The 2015.0 release of ZoneManager includes the following new features:

Create AOI Selection in IsoMap Import dialog box

In the current release, you can filter the list of available IsoMap layers you want to import to your active Area of Interest using the Area of Interest list box.



Fixed Issues

Following customer reported bugs were fixed in this release.

ID	Title
Architecture	
66961	Project Database Rebuilder Tool fails on projects in a folder with a project home.
Coordinate System Manager	
53194	Defining WGS 84 Web Mercator requires a datum shift to WGS 84.
DefCon2	
32566	WellBase Imports – Deviation surveys calculated for wells in the database are not included in the import file.
66035	IHS 297 Import IP Treatment IDs are incorrect. They increment sequentially between wells, instead of starting over with each well.
66737,67549	IHS 297 Import – Using Batch survey calculator after Bulk and Regular imports calculates a different number of wells.
66744,67490	IHS 297 Import – “Field name” is not imported under the well header using Bulk and Regular import options.
66750	IHS 297 Import – Regular Import performance is much slower on version 2014.2 with huge gxdb.log files.
66891	IHS 297 Import – Trimmed well ID is not used in Survey ID under the Proposed Survey tab.
67491	IHS 297 gives an error message during calculation of surveys using Regular import.
DepthRegistration	
17154	Add check box to import image files for wells with UWI not in the database on DepthRegistration Import dialog for all file formats.
50970	Regular file import is much slower than DRA file import.
GeoAtlas	
40382	If an .LYR file is imported without “Copy file to Layer’s Folder” checked, changes to symbology are not saved properly.
40705	ArcGIS Server and WMS imports are not reading selected import coordinates.
53187	GeoAtlas hangs while switching projects when various applications are open.
63431	Performance – GeoAtlas takes 3 to 4 times longer to open in 2014.1 than in 2013.0.1.
67039	Blank layer is displayed when creating Seismic 3D Basemap layer in GeoAtlas. Error when trying to update the blank layer.
68049	Large .emf file used in Page View disappears when you reopen the Map View.
68422	Copy Coordinates – Copied Longitude is incorrect when the format is set to DMS.
70235	Doc – Link to Getting Technical Support page does not work.
Installation	
66631	Custom DefCon2 Import definitions were lost during upgrade or uninstall of 2014.x releases.



Licensing	
43169	License Management Tool does not support Hostnames that start with a digit.
65160	User wants to use Multiple License Servers.
PRIZM	
29651	UDE output is Null using the <Bitsize> parameter.
31581	Multi-well UDE output is not appending curve sets properly.
39400	Get incorrect values when running Curve Data Statistics on <NetRes> and <NetPay> curves.
60105	Reservoir/Pay Summations should not allow an attribute name longer than 16 characters.
65240	Multi-well UDE output yields a null curve, but single well works fine.
67189	Report sum types are incorrect.
67190	PRIZM report for avg and avgx statistics are now correctly calculated.
73840	Graphical Curve Normalization – Selecting reference wells having different step values throws the message “Some error found while loading...”.
76365	Res/Pay Summations dialog box is cut off when Text Size is not set to Small in Control Panel.
Pro 3D	
57832	Need to recheck wiggle trace box to show (sync issue).
69457	Microseismic not loading on client’s project.
76566	Default curve set “Field Data” not there.
SeisVision	
27946	Checking ON completion data when an arbitrary line is active can cause wellbores to disappear, well symbols above trace data not to post correctly, and completion data not to show.
35308	Horizontal display stretched in Microsoft Remote Desktop.
54352	Horizon Copy does not copy horizons if the 2D lines overlap.
54353	Horizon operations: Copying a horizon from more than 10 2D lines does not copy the horizon to all lines.
54964	Depth seismic from time interpretation is not in the correct location if the coordinate systems are not the same.
57280	2D Line Name has a 25-character limit, which causes the application to crash when exporting.
60689	SynView doesn’t display seismic traces around the wellbore.
62265	SynView labels for SP/CMP at the bottom of a 2D line appear as L and XL.
65236	The depth values of a Multi-Z time-converted depth horizon are not correctly mapped in the mapping grid.
65647	Save settings for Pick Parameters Panel view when disabled.
66951	The layer cannot be displayed in SeisVision when a Tiff image is imported using the File> Import>Georeferenced Image Import option with ArcGIS 10.1.
67983	“Reason” should be well defined inside the error logs while loading seismic data.
68520	Have a Save/Load feature in the 3 Points dialog box when entering the corners of a 3D SEG-Y file in the 3D Load Wizard.
68705	The Seismic backdrop is not working when pulling traces from 2D lines.
70428	Horizon ASCII file will not import into a depth-domain interpretation if the



	Horizon name is last.
71381	GeoAtlas layers do not display on a customer-supplied dataset in SeisVision 2014.2 and later.
71649	Output velocity volume starting IL/XL do not match input IL/XL.
71819	License checkout problem in SeisVision with multiple users and interpretations.
smartSECTION	
68586	Unable to match the color palette in the seismic backdrop with the one used in SeisVision.
71442	TGS vector log auto-import is broken. Wells appear as green wellbores.
WellBase	
37376	Top TVDs are not calculated for imported tops (Top MDs), if the survey is protected.
58755	Zones – Filter Zones and Attributes – The Attribute columns are not displayed in the user-specified order on the Zones tab.
59163	Zone Scan Calculator will not calculate Core Analysis Porosity Min, Max, Average, or Sum.
60557	Delete Data – Proposed Surveys are missing from the list of tables.
63419	Layer Create - Parse function is not parsing attribute data for deviated wells; cannot create bubbles/pies.
64454	Clone Well - Texas location not copied for some Texas wells.
66682	Need to update the Help file for the Production Graph Layer Create dialog box.
67209	User Formation list is growing in the gxdb.log file compared to older versions.
68519	Imported Proposed Surveys are not calculated (Spreadsheet or DefCon2).
XSection	
41510	Error – IsoMap layer does not have a grid for a gridded IsoMap layer that was previously drawn.
ZoneManager	
62449	All attributes are not showing for zones in the Zone Attribute Calculator.

Known Issues

Following is a list of known issues in this release and is a work in progress.

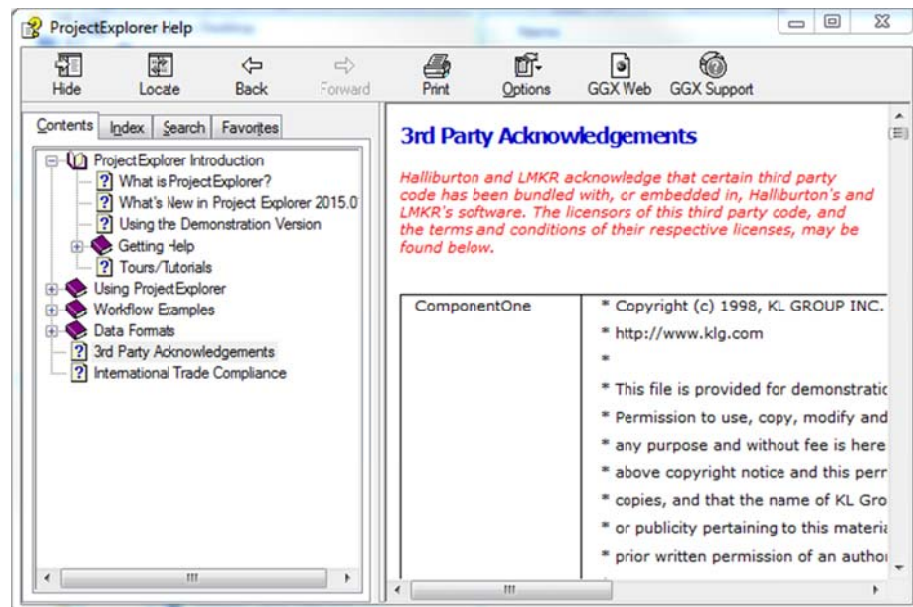
ID	Issue	Workaround
54434	Cannot configure two License files with two different bitlocks at the same time through LMT.	If the license features from both licenses are combined into one license file, then both bitlocks can be found.
67476	SeisVision (DOW) – Horizontal fault trace disappears after re-opening a saved interpretation.	No workaround
70639	SeisVision – Pick Parameters Panel undocked resize setting are not saved.	No workaround
72082	SeisVision (DOW) – upthrown and downthrown sides of fault do not show up, as node information is not passed from SV to GA.	No workaround
74233	SeisVision – Seismic data is clipped from the bottom when user specifies different start times for input/output files.	No workaround
75425	SeisVision – Seismic backdrop in smartSECTION pulls seismic traces for a single line from a 2D composite line.	No workaround
75807	smartSECTION – Import TGS and LOGarc raster log – need to refresh to see the log indicator in the Wells/Log tab.	Select “Refresh All Views” to see raster logs in Wells/Log tab.
75880	SeisVision / smartSECTION – “Update Failure” and “Refresh Backdrop” messages appear side-by-side giving the user contradictory information.	No workaround
75975	WellBase (DOW 10.1) – “OwdbApi” error prompts while formation under DST, Core and Perforation table with a new formation added in Strat Column Manager.	No workaround
77068	WellBase (DOW) – Warning message states “Unable to update/insert record” when user adds a new IP record by moving between grid cells in DOW.	No workaround
77796	XSection – sdx files not usable if opened by browsing to the smartSECTION Interpretation folder.	If the sdx file is selected in the Map View tree in smartSECTION, then right-click and select the View Cross Section in XSection option, as the file can be modified and saved as an sdx file in XSection.
78499	smartSECTION (Pro Users Only) – smartSECTION hangs upon changing the active strat column when there are more than 30 modeled surfaces.	Users wanting to change their strat column should close sS, make this change in ProjectExplorer before re-opening sS. Or, users may limit their number of modeled surfaces to 30 or fewer if changing the active strat column while using sS.

Third Party Applications

Halliburton and LMKR use various third-party applications in the development of its software.

Halliburton and LMKR acknowledge 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. To access the third party applications:

1. In any GeoGraphix application select **Help >> Contents**.
2. On the Help window contents page locate the 3rd Party Acknowledgements Help topic as shown below.





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Support@lms.com

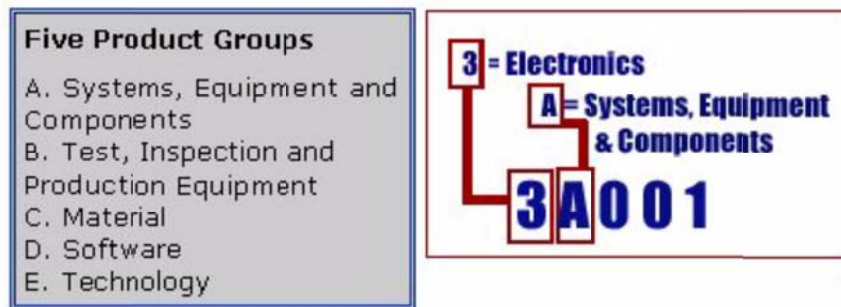
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The URL is: <http://www.bis.doc.gov>

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The ECCN/CCL 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/CCL Number	License	CCATS Number	Last Date Updated
Discovery	5D002	ENC	G063964	11/5/2009
Landmark Software Manager (LSM)	5D002	ENC	G058319	2/11/2008
OpenWorks	5D002	ENC	G054746	2/11/2008
LMKR License Manager	EAR99			10/1/2012



Contacting Technical Support

If you have questions or issues that cannot be answered by the LMKR Help Systems, you can contact LMKR Customer Support via the web: support.lmkr.com, email: support@lmkr.com or telephone at our various worldwide office locations:

The Americas	Europe, Middle East & Africa
8am-6pm CST *Excluding bank holidays [Monday – Friday] Toll Free (US/Canada): + 1 855 GGX LMKR Colombia: + 57 1381 4908 United States: + 1 303 295 0020 Canada: + 1 587 233 4004	UAE (Dubai GMT+4): 8am - 5pm [Sunday – Thursday] *Excluding bank holidays + 971 4 3727 999 UK: 8am - 5pm [Monday - Friday] *Excluding bank holidays + 44 20 3608 8042 Egypt: [Sunday – Thursday] *Excluding bank holidays + 0800 000 0635
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Name	Website Address
LMKR home page	http://www.lmkr.com
LMKR Support Portal	http://support.lmkr.com
Landmark Support Portal	http://css.lgc.com/InfoCenter/index?page=home
Landmark Software and Services home page	http://halliburton.com/landmark
SyBase home page	http://www.sybase.com
Microsoft SQL Server home page	http://www.microsoft.com/sqlserver
Oracle home page	http://www.oracle.com



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Clean, Handheld Field Operator, HHFO, High Science Simplified, Horizon Generation, I2 Enterprise, iDIMS, Infrastructure, Iso Core, IsoMap, iWellFile, KnowledgeSource, Landmark (as a service), Landmark (as software), Landmark Decision Center, Landmark Logo and Design, Landscape, Large Model, Lattix, LeaseMap, LogEdit, LogM, LogPrep, Magic Earth, Make Great Decisions, MathPack, MDS Connect, MicroTopology, MIMIC, MIMIC+, Model Builder, Nexus (as a service), Nexus (as software), Nexus View, Object MP, OpenBooks, OpenJournal, OpenSGM, OpenVision, OpenWells, OpenWire, OpenWire Client, OpenWire Direct, OpenWire Server, OpenWorks, OpenWorks Development Kit, OpenWorks Production, OpenWorks Well File, PAL, Parallel-VIP, Parametric Modeling, PetroBank, PetroBank Explorer, PetroBank Master Data Store, PetroStor, PetroWorks, PetroWorks Asset, PetroWorks Pro, PetroWorks ULTRA, PlotView, Point Gridding Plus, Pointing Dispatcher, PostStack, PostStack ESP, PostStack Family, Power Interpretation, PowerCalculator, PowerExplorer, PowerExplorer Connect, PowerGrid, PowerHub, PowerModel, PowerView, PrecisionTarget, Presgraf, PressWorks, PRIZM, Production, Production Asset Manager, PROFILE, Project Administrator, ProMAGIC, ProMAGIC Connect, ProMAGIC Server, ProMAX, ProMAX 2D, ProMax 3D, ProMAX 3DPSDM, ProMAX 4D, ProMAX Family, ProMAX MVA, ProMAX VSP, pSTax, Query Builder, Quick, Quick+, QUICKDIF, Quickwell, Quickwell+, Quiklog, QUIKRAY, QUIKSHOT, QUIKVSP, RAVE, RAYMAP, RAYMAP+, Real Freedom, Real Time Asset Management Center, Real Time Decision Center, Real Time Operations Center, Real Time Production Surveillance, Real Time Surveillance, Real-time View, Reference Data Manager, Reservoir, Reservoir Framework Builder, RESev, ResMap, RTOC, SCAN, SeisCube, SeisMap, SeisModel, SeisSpace, SeisVision, SeisWell, SeisWorks, SeisWorks 2D, SeisWorks 3D, SeisWorks PowerCalculator, SeisWorks PowerJournal, SeisWorks PowerSection, SeisWorks PowerView, SeisXchange, Semblance Computation and Analysis, Sierra Family, SigmaView, SimConnect, SimConvert, SimDataStudio, SimResults, SimResults+, SimResults+3D, SIVA+, SLAM, SmartFlow, smartSECTION, Spatializer, SpecDecomp, StrataAmp, StrataMap, StrataModel, StrataSim, StratWorks, StratWorks 3D, StreamCalc, StressCheck, STRUCT, Structure Cube, Surf & Connect, SynTool, System Start for Servers, SystemStart, SystemStart for Clients, SystemStart for Servers, SystemStart for Storage, Tanks & Tubes, TDQ, Team Workspace, TERAS, T-Grid, The Engineer's DeskTop, Total Drilling Performance, TOW/cs, TOW/cs Revenue Interface, TracPlanner, TracPlanner Xpress, Trend Form Gridding, Trimmed Grid, Turbo Synthetics, VESPA, VESPA+, VIP, VIP-COMP, VIP-CORE, VIPDataStudio, VIP-DUAL, VIP-ENCORE, VIP-EXECUTIVE, VIP-Local Grid Refinement, VIP-THERM, WavX, Web Editor, Well Cost, Well H. 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