Geomodeling 2019.4

GVERSE® Geomodeling

Fully Integrated 3D Interpretation

GVERSE® Geomodeling is a sophisticated integrated solution for subsurface geological/reservoir modeling. Detailed analysis of the reservoir is always crucial prior to field and well planning. With GVERSE Geomodeling, making an informed decision is much easier as this application supports numerous types of data sources for a comprehensive understanding of the petroleum system.

The integrated application combines geological, geophysical, petrophysical, GIS, and engineering data in a single environment, with real-time 3D visualization of the developing geomodel that helps interpret the results from different domains of geosciences and formulate optimized and cost-effective field development solutions.

Surface relationships are modeled in a dynamic real-time environment. The geosurface model can be configured to generate surface conformance relationships, unconformity trimming, channel geometries, subcrop mapping, fault offset and automatic fault polygon generation, as well as gross, net, and net/gross, and reservoir property maps.

Key Benefits

Real-time Integrated Visualization of Results
GVERSE Geomodeling provides an integrated real-time map view, cross section view, and 3D visualization of the developing geomodel. GVERSE Geomodeling integrates petrophysical, geophysical, drilling, and GIS data into the interpretation to observe the real time effect of what-if scenarios on a developing geomodel.

Quick and Easy
As compared to traditional tools, GVERSE Geomodeling allows geoscientists to load, integrate, interpret, and display large datasets with minimum time and effort required.

Flexibility

Features like the ability to Quick Pick surface tops and fault cuts on cross sections and the map view, clip the 3D gird, develop fence diagrams, create modeling regions, and define well group annotations to offer greater flexibility in the interpretation workflow. Docking windows and panels provide the freedom to arrange the workspace as desired. Saving the interpretation configuration of the workspace enables the user to resume the work from where they left off after closing the previous session.

Key Features

Integration

Observe the multi-disciplinary relationships in your geomodel with tightly integrated and synchronous Map, Cross Section and 3D views. GVERSE Geomodeling is designed for the geoscientists who work on integrated data sets that include geological, petrophysical, geophysical, drilling, and GIS data. It includes an integrated map, cross section, and 3D view of the geomodel which enables you to work in 2D or 3D views simultaneously. Use the GeoSurface Model tool to efficiently source and generate surfaces and faults and model complex geometries such as unconformities, channels, and subcrop maps, conformance relationships among surfaces, and fault offset and automatic fault polygon generation on all the views of GVERSE Geomodeling.

Integration with GVERSE Petrophysics

Considering the importance of petrophysics in understanding the reservoir, the application facilitates the representation of petrophysical properties (i.e. porosity, saturation, and geomechanics, etc.) based on GVERSE Petrophysics models. These petrophysical modeling results can be displayed on the fence diagrams as curves to better understand the character of the reservoir or on presentation templates on the cross section view.
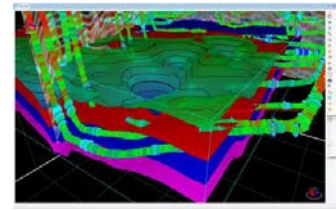
Integration with GVERSE Geophysics

Incorporate your seismic interpretation into your geomodel with dynamically depth converted horizons, faults, and seismic backdrops on cross sections and fence diagrams. Update the velocity model with interpreted interwell points from your smartSTRAT geosteered well for the most up-to-date depth conversion possible.

Integration with ZoneManager

Attribute data stored in ZoneManager zones can be accessed to automatically generate property maps in Map View. This feature enables GVERSE Geomodeling to have access to data from any source that is stored in ZoneManager for full integration across multiple domains.

Block Diagrams

GVERSE Geomodeling allows you to create block diagrams or gun sight sections that show intersection point of horizontal wellbore with the line of section as it drills through the target formations. In block diagrams, the line of section is laid perpendicular to the wellbore path and in the cross section view they show penetration point of the horizontal wellbore drilling inside the target horizon. This helps the drillers in planning inside the drilling section unit as distances between wells can be shown in the block diagram.
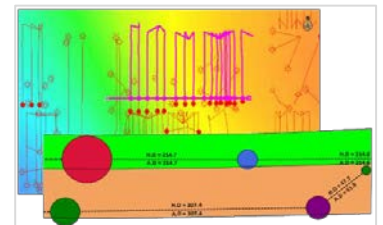
Absolute and horizontal distances between wells drilling inside the same target can be annotated very easily on the b l o c k diagram. Likewise, boundary distances between edge wells can also be annotated on the block diagram. Additionally, you can add formation thickness, distance filtering on the basis of formations and wellbore custom properties to get the complete picture of drilling wells and their placement inside the respective target formations.

Fence Diagrams

Facilitate a better understanding of the reservoir by creating fence diagrams of the open cross sections. This feature assists in analyzing and representing litho-stratigraphic relationships, pinchouts and truncations of units, unconformities, structural and stratigraphic traps within the reservoir.
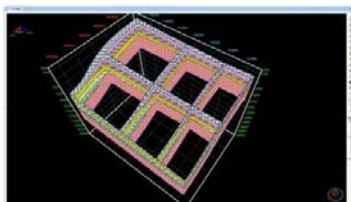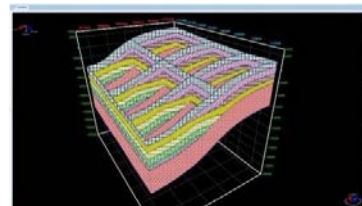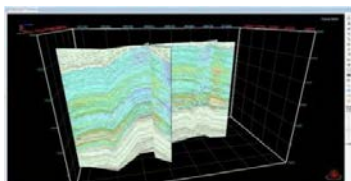
Co-blending

Validate the reservoir behavior by co-blending seismic attributes against interpolated curve properties, lateral lithofacies variation, and related structural geometries on cross sections and fence diagrams.

Interpolation

Advance your understanding of the reservoir by analyzing different geological sections and identify lithofacies, stratigraphic sequences, and depositional trends from the logs. GVERSE Geomodeling interpolation helps you understand the interplay between lithofacies and depositional or structural trends.

Clipping Planes

In a complex geomodel, clipping can play a significant role in examining the relationships among surfaces and faults. Using GVERSE Geomodeling clipping tool, you can easily clip planes vertically or horizontally to keep a specific portion of the scene's geometry in focus and analyze the trajectory of wells as they are drilled through geomodel surfaces.

Completion and Perforation Postings

Display completions stages and perforation clusters along the wellbore path in **3D View** to identify the productive zones of the targeted formations.
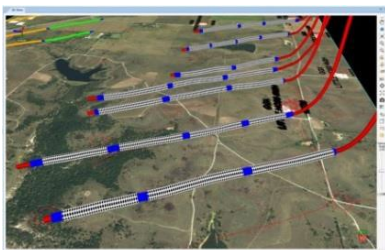
Opening XSection Cross Sections in GVERSE Geomodeling

XSection cross-sections within the AOI of the active interpretation can be migrated into the Geomodeling interpretation to integrate legacy cross section work with the new interpretation. This import feature validates the data in the XSection cross section and matches the stratigraphic column, surfaces, faults, and the cross section name in the migrated cross section.
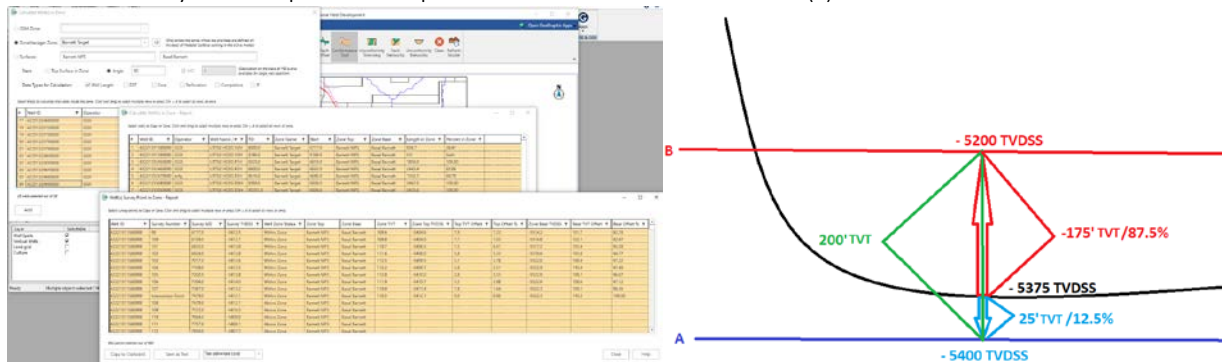
Opening GeoAtlas Maps

Mimic your GeoAtlas workflow by being able to open any GeoAtlas map in the map view of Geomodeling. Quickly change between saved GeoAtlas maps without having to select individual layers for display.
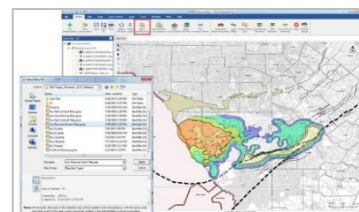
Release Highlights 2019.4

Survey Points in Zone Reports

Create a Survey Point report of the position of the well within a zone(s).
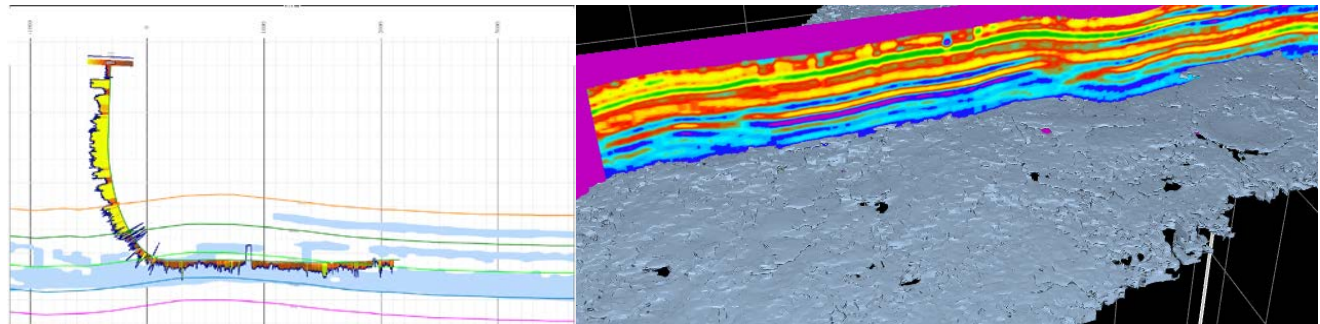

Apply Color on Type Logs and Correlation Logs

The user can now color the type and correlation logs, which allows users to differentiate between the correlation/type logs and the actual logs.
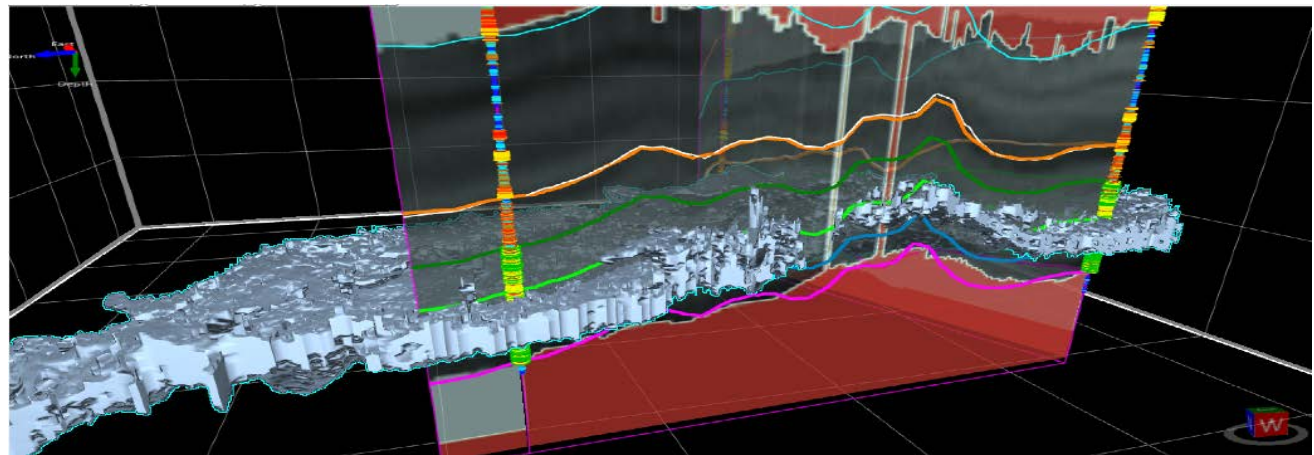
View and Save Geobodies in Cross Section View

The users can now view and save geobodies in Cross Section view. The geobody properties can also be set in Cross Section view.


Geobodies in 3D View

The users can now view and save geobodies in the 3D view. The geobody properties can also be set in the 3D view.

## Performance Improvements in Well Zone Calculations

Performance has been improved in various Well Zone Calculations workflows. The performance is enhanced specially while:

- Generating the error log
- Calculating well parameters
- Generating reports
- Saving reports
- Copying data from clipboard and pasting in any compatible application
- Using wellbore survey angle as the starting parameter for calculations
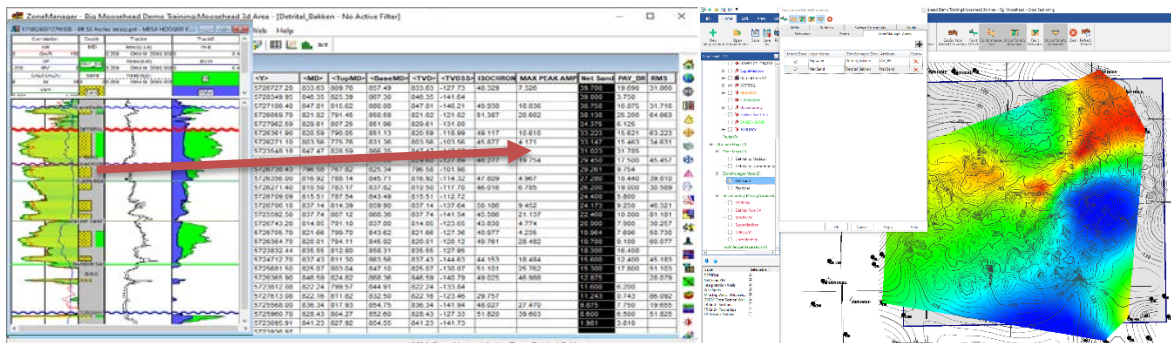- Reusing calculated data
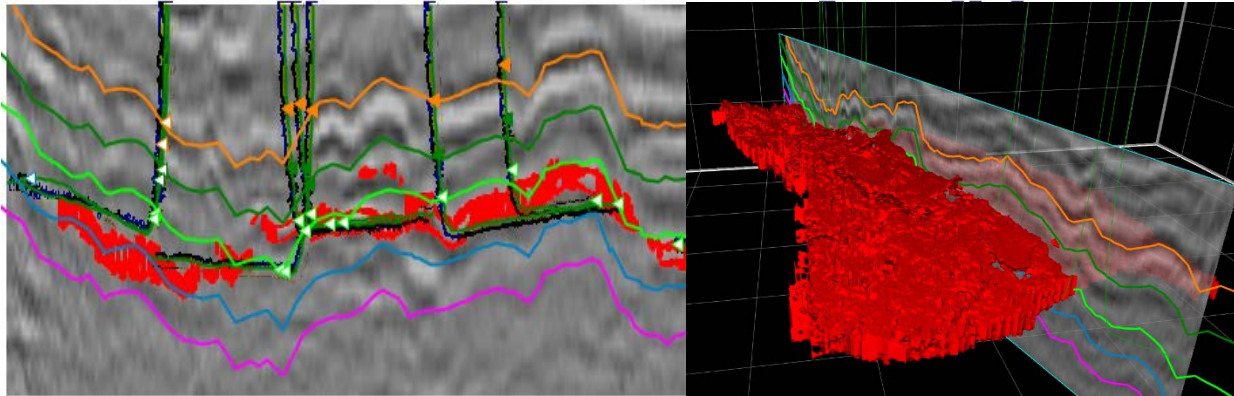
Calculate Well in Zone for Multiple Zones

Calculate the length and percent of the well bore and other core and test data within a zone for multiple zones.
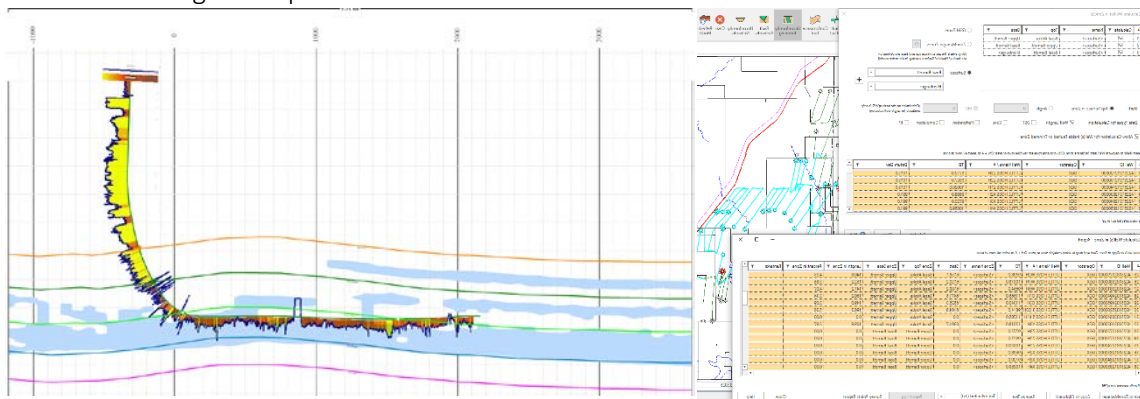
Property maps from ZoneManager attributes

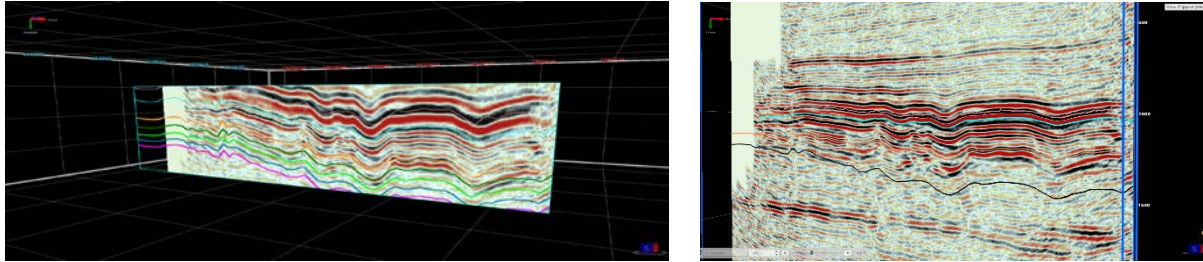Generate on-the-fly property maps from attributes stored in any ZoneManager zone.

Cursor Tracking between GVERSE Geomodeling and GVERSE Geophysics

The mouse cursor tracking functionality is now enabled between the views in GVERSE Geomodeling and GVERSE Geophysics. This results in an effective correlation between the two applications.
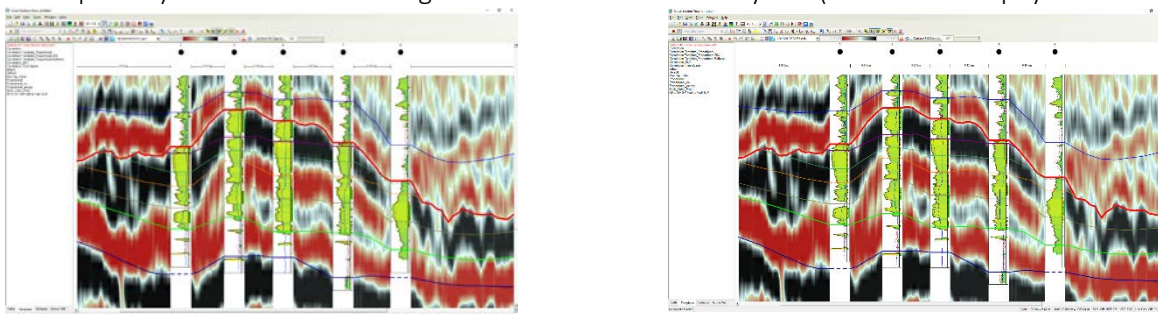

Export Surface Points

Export well and interwell points from either map or cross section. Points can be exported as .csv file or tab delimited file.
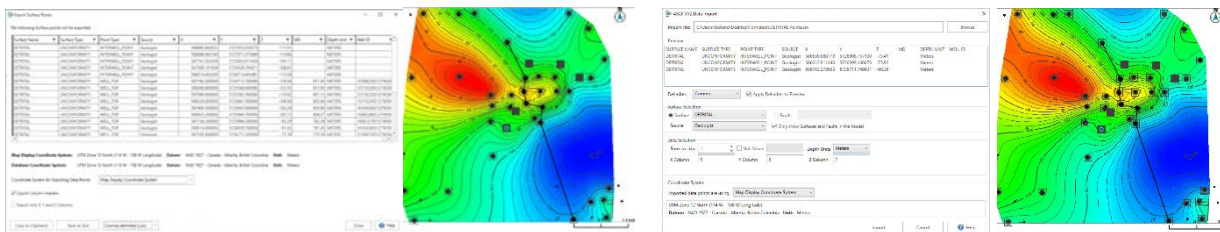
Open GVERSE Geomodeling Cross Section as an Arbitrary Line in GVERSE Geophysics

This is another example of applications cross functioning seamlessly within the GVERSE GeoGraphix solution. You can now open any GVERSE Geomodeling cross section as an arbitrary line (in GVERSE Geophysics.


Import Surface Points in ASCII XYZ Format

Surface points can be imported in ASCII XYZ format, which aids in updating the geomodel and integrating with third party geosteering applications.

Color Palette Control for Individual Versions of Seismic Backdrop

Individual color palettes can now be saved with different seismic versions, which allows you to view all versions with their respective color palettes.

Disclaimer
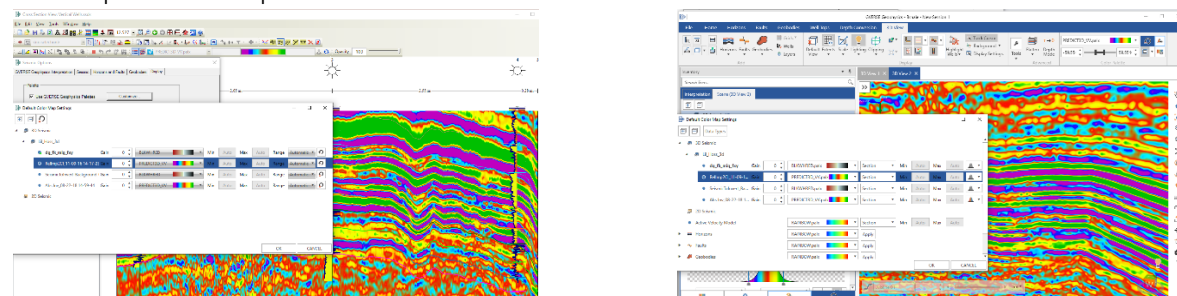
Requirements

The following sections list the system requirements for the GVERSE Geomodeling:

Software

The software that must be installed on the system running the application are as follows:

- GeoGraphix 2019.4
- LMKR License Management Tool 2019.3 for GVERSE® Geomodeling license
- Microsoft DirectX End-User Runtime (June 2010)
- Adobe Reader for selected help files (optional)

Operating System

To run the application, you need one of the following operating systems installed on your system:

- Windows® 7 Professional x64
- Windows® 7 Enterprise x64
- Windows® 7 Ultimate x64

- Windows® 10 Professional x64
- Windows® 10 Enterprise x64

Note: It is recommend to use the latest Microsoft® service packs and security patches. Geomodeling specifically requires Windows platform update KB2670838 installed on the machine, in case the operating system is Windows 7.

Hardware

- System: 8 GB (16+ GB recommended)
- Graphics Card: 2 GB (4 GB recommended)
- DirectX 11 capable hardware

Note: We recommend using the latest video drivers and Microsoft updates for your system.

Licenses

The following licenses are required to run the application:

- GeoGraphix license version 2019.4
- GVERSE® Geomodeling license version 2019.4

The GVERSE® Geomodeling license is required to enable Model 3D view and Contours on Map view. Also note that FrameBuilder™ is part of the GVERSE® Geomodeling license.

Note: Refer to the Customer Support Portal (https://www.gverse.com/support) for up-to-date information on the requirements.