RELEASE NOTES

Predict3D

Multi-attribute inversion solution

2017.3

Powered by LUMINA

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Introduction

LMKR is pleased to announce the release of the GVERSE® Predict3D 2017.3 software.

This document provides an introduction to the Predict3D[1] software features and benefits. It also lists the system requirements necessary to install and run the software.

What is GVERSE Predict3D?

The Predict3D software is a multi-attribute inversion solution based on spectral decomposition and state-of-the-art optimization techniques developed over the years by Dr. John Castagna of LUMINA.

The Predict3D software predicts high-resolution reservoir properties using multi-attribute analysis by combining seismic and well data. This software predicts rock properties in between, and away from existing well control, by using well information as a guide to compute the best combination of seismic attributes. It also uses the Minimum Support Optimization algorithm to select the minimum number of attributes that offer the best prediction of the desired reservoir property. The predictions are applied on a trace by trace basis along the entire seismic survey resulting in a 3D volume of reservoir properties. The Predict3D software is part of the GVERSE application suite by LMKR (http://www.lmkr.com/gverse).

LMKR GVERSE consists of geoscience and engineering solutions focused on workflow optimization and enhancing productivity of teams working on diverse geological and geophysical projects. These applications help cut the processing time required for interpretations resulting in fast, easy to use scalable tools that are inter-operable with other known geoscience software suites; enabling a connected multi skilled workforce.

[1] Powered by LUMINA

Main Features

The main features of the Predict3D software are as follows:

- Predict reservoir properties in between and away from wells.
- State-of-the-art CLSSA Spectral Decomposition to produce high-resolution property volumes.
- Multi-core processing engine for fast calculation of predictions.
- Seamless integration with SeisVision.
- Support for SEG-Y and 3DX formats.
- Support standard formats for well data.
- Customized ASCII reader for non-standard formats of well data.
- Easy and intuitive management of input seismic and well data.
- Tools for input data QC including well view, seismic view and wells overlaid on seismic.
- Organize and compare multiple predictions results and create property volumes.

Benefits

- **Make Informed and Accurate Decisions**: Significantly improves your understanding of the reservoir to make more informed decisions. Robust integration of seismic and well information into a high-resolution prediction of rock properties gives you a better understanding of the reservoir distribution and internal architecture.
- **More Accurate Field Planning and Geosteering:** The detailed reservoir property volumes are created using a sophisticated multi-attribute and high resolution prediction. These combined with GeoGraphix® analysis tools aids in creating improved well designs and provides better support for geosteering. This helps create more accurate well plans, identify optimal landing zones and keep the bit in the sweet spot.
- **Robust Workflow and Integrated QC Tools:** Predict3D is fully integrated within GeoGraphix, and it has a well-defined and straightforward workflow making it friendly for interpreters and engineers, providing fast and robust results.

System Requirements

The following sections list the system requirements for the Predict3D software.

Software

The software that must be installed on the system running the Predict3D software are as follows:

- Microsoft® .NET 4.5
- GeoGraphix Discovery 2017.3 is required for integrated mode only
- MATLAB Compiler Runtime 8.2
  LMKR License Management Tool 2016.1 for Predict3D license.
  The LMKR License Management Tool (LMT) must be installed to configure the Predict3D license.

Operating System

To run the Predict3D software, 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.

Hardware

The hardware requirements to run the Predict3D software are as follows:

- Any Intel or AMD x64 processor supporting SSE2 instruction set
- Minimum 1024 MB RAM is required. 2048 MB is recommended

Licenses

The following licenses are required to run the Predict3D software:

- GVERSE Predict3D license version 2017.1.
- GeoGraphix Discovery license version 2017.1. It is required for integrated mode only.

Note: Refer to the LMKR Customer Support > Knowledge Center > System Requirements page for up-to-date information on the requirements.

Third Party Applications

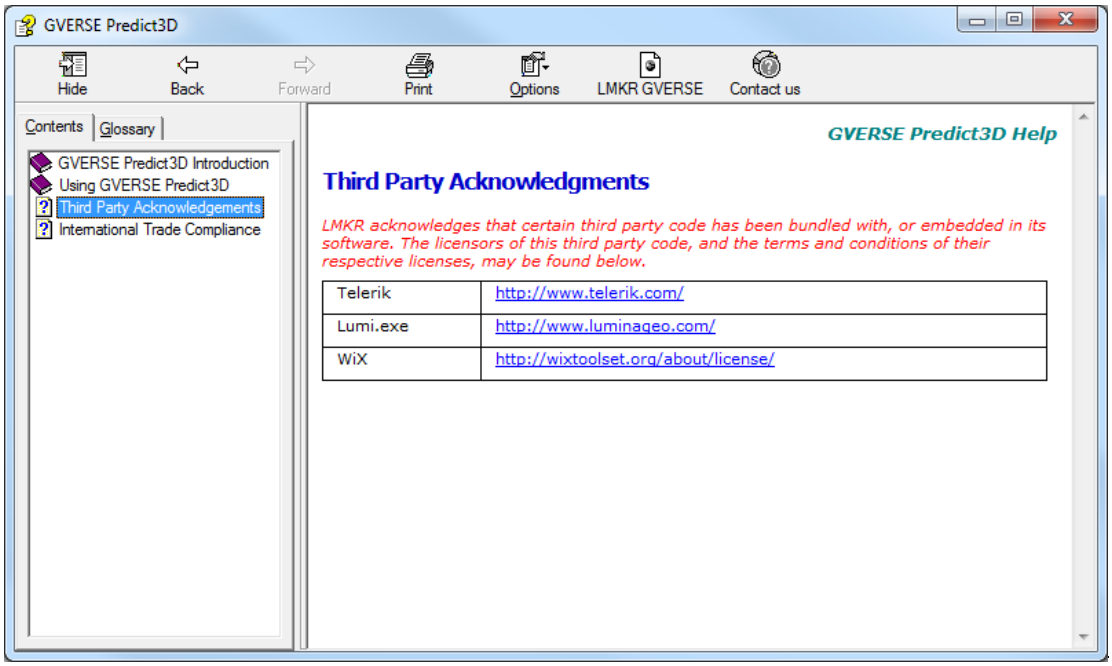
LMKR acknowledges that certain third party code has been bundled with, or embedded in, its software. The licensors of this third party code, and the terms and conditions of their respective licenses, may be found in the Predict3D software Help file.

To access the third party license agreements:

1. From the Predict3D **Help** menu, select **View Help**.

   The Help window displays.

2. In the **Contents** pane, locate the **Third Party Acknowledgments** help topic, as shown in the image below.



International Trade Compliance

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

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

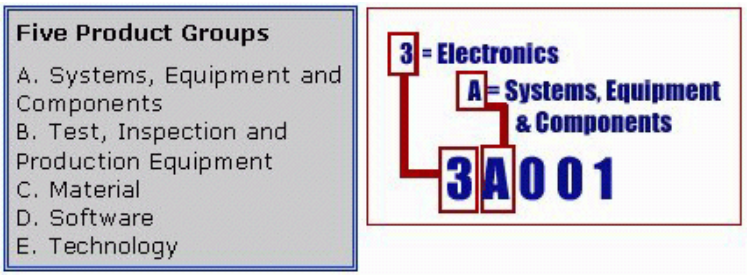
Under the U.S. Export Administration Regulations (EAR), the U.S. Government assigns your organization or client, as exporter/importer of record, responsibility for determining the correct authorization for the item at the time of export/import. Restrictions may apply to shipments based on the products,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

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

Definitions

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 following illustration is a sample:



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

Product/Component/R5000	EAR Number	License	Last Updated On
GVERSE Predict3D	EAR99	EAR	11/23/2015

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 & South America	**Europe, Middle East & Africa**
Monday – Friday 8 am – 6 pm 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 8 am – 5 pm* +44 20 3608 8042 **UAE:** Sunday – Thursday (Dubai GMT+4) 8 am – 5 pm* +971 4 3727 999 **Excluding bank holidays*
Asia Pacific & Australian Continent	**Southwest Asian Countries**
Malaysia: Monday – Friday (Kuala Lumpur GMT+8) 9 am – 6 pm* +60 32 300 8777 **Excluding bank holidays*	**Pakistan:** Monday – Friday (Islamabad GMT+5) 9 am – 6 pm* +92 51 209 7400 **Excluding bank holidays*

Helpful Links

Name	Website Address
LMKR Homepage	http://www.lmkr.com
LMKR GVERSE	http://www.lmkr.com/gverse
LMKR Support Portal	http://support.lmkr.com
LUMINA Homepage	http://www.luminageo.com