5000.0.0

Release Notes

Contents

HALLIBURTON | Landmark Software & Services

What's in This Release

Welcome to Release 5000.0.0. Release 5000.0.0 is a major synchronous release for the DecisionSpace and Classic products environments. It delivers enhanced functionality and performance along with interoperability for your E&P workflows. Release 5000.0.0 supports both Landmark Classic and Built for DecisionSpace applications to provide an open platform that allows you to adopt a "best-of-breed" strategy and leverage your current IT investments.

This release upgrades Landmark's product portfolio to support newer platforms, operating systems, processors, other vendors' software, video cards, and more.

Special note

The information included in this document is only for the 5000.0.0 release of each software package and some select information for subsequent releases. If your software has been updated, please review the corresponding product release notes for the latest changes to the software.

Major Improvements to Release Components

- **Interoperability of Applications.** The Landmark Classic products and the applications built for DecisionSpace share the same project databases (for example, OpenWorks® and EDM) and have common platforms that offer seamless interoperability and optimal performance.
- **Infrastructure.** Landmark continues the growth and functionality of the DecisionSpace service-oriented architecture and common components and services.
- **Supported Platforms and Components.** The release supports new platforms; operating systems; and third party applications (such as the Oracle Database). Providing such support helps you take advantage of the latest improvements in hardware and networking and offers better performance and larger processing capacities.
- **Software Development Kits.** New and updated Software Development Kits give you the flexibility to build your own workflows and solutions. The Engineer's Data Model and DecisionSpace Infrastructure software development kits are being added to the existing portfolio of the OpenWorks® Development Kit (which also includes seismic data management).

Go To “What’s in this Release?”

Moving to Release 5000.0.0

Some applications require a specific version of the application before you upgrade to Release 5000.0.0. Below is a list of products along with the version of the application you must be on prior to moving to Release 5000.0.0.

Product	Version	Comments
Drilling and Completions Software Applications		
3D Drill View KM	2003.19.1	
CasingSeat	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
Collaborative Well Planning	2003.19.1	
COMPASS	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
Data Analyzer	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
iWellFile	2003.21.1	
OpenWells	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, 2003.16, or 2003.21.
Presgraf	2003.0.4	
PROFILE	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
Real-Time View	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
StressCheck	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
Wellbore Planner	2003.12	

Go To “What’s in this Release?”

Product	Version	Comments
Drilling and Completions (continued)		
WELLCAT	2003.21.1 or 2003.0.4.x	
Well Cost	2003.16.1 or greater	
WELLPLAN	2003.21	Scripts are available to upgrade from 2003.11, 2003.14, or 2003.16 to 2003.21
Geological and Geophysical Technologies Software Applications		
PetroWorks	2003.12.1	Requires OW 5000.0.0
SeisWorks®	2003.12.2	Requires OW 5000.0.0
StratWorks	2003.12.0	Requires OW 5000.0.0
SynTool	2003.12.0	Requires OW 5000.0.0 and SeisWorks® 5000.0.0
TDQ	2003.12.1	Requires OW 5000.0.0 and SeisWorks® 5000.0.0
Z-MAP Plus	2003.12.1	No requirements unless OW is installed, and then it must be OW 5000.0.0
Information Management and Infrastructure Software Applications		
Corporate Data Store	2003.20.0.0 or newer	Database will be upgraded. Application is a new install.
OpenWorks®	2003.12.0, or newer	In OpenWorks® 5000.0.0, the project upgrade process can upgrade individual projects as old as R98; however, if you want to upgrade projects with the batch upgrade process, the projects must be 2003.12.0, or newer. Projects can be upgraded from an older version to Release 5000.0.0, but you must create a clean installation of OpenWorks® 5000.0.0, and then upgrade the old projects to the new installation one at a time.

Go To “What’s in this Release?”

Product	Version	Comments
Information Management and Infrastructure (continued)		
PetroBank Master Data Store	2003.20.0.1	Database will be updated. Application will be a new install
PowerExplorer	2003.20.0.0 or newer or 2003.20.1 or newer	
Reference Data Manager	N/A	This is always a new install.
Team Workspace	2003.20.0.0 or newer	

Go To “What’s in this Release?”

Discontinued Products

The following products will not be supported on the Release 5000.0.0 platforms. For more information, please contact your sales representative.

Drilling and Completions
DrillModel
Geological and Geophysical Technologies
PetroWorks ULTRA
GMI Imager
GeoProbe RSI
MVA/3DPSDM
DepthTeam Extreme
SeisZip
Information Management and Infrastructure
Geoshare Half Links
Engineer’s Link
OpenExplorer
Production Optimization
Desktop Navigator
OpenWire for Production

Go To “What’s in this Release?”

Before You Install

After confirming that your application is at the correct version for upgrading to Release 5000.0.0, you should review the application release notes *entirely*. The new Landmark Software Manager gives you the ability to read both the Release Notes and Installation Guides prior to downloading the application.

The Product Release Notes provide the necessary information about:

- The specific platforms available for the application. (This information may be included in the Installation Guide.)
- Enhancements and new functionality

Go To “What’s in this Release?”

About Electronic Software Delivery and DVDs

For Release 5000.0.0, Landmark is introducing Electronic Software Delivery. You will be able to download your software as soon as it is available instead of waiting for media to be manufactured and shipped. Landmark is working with its customers to determine who will have the ability to use this new system.

The customer interface for downloading products electronically is called Landmark Software Manager (LSM). It offers the opportunity to download software when it is convenient for you. LSM also gives you the opportunity to review the Release Notes and the Installation Guide prior to downloading the application or patch. You can then decide whether you want to download the release or patch.

In addition, if you cannot download the applications through LSM due to bandwidth problems or if you prefer media, Landmark will provide DVDs to customers who request them. You can use the LSM application to request the DVDs.

Go To "What's in this Release?"

System Requirements

Supported Operating Systems

The table below lists the Operating Systems for the Release 5000.0.0 supported platforms. All products are not available on all systems. For example, most of the Drilling Applications are available only on Windows Operating Systems. In addition, some applications may run only on Linux and Solaris. Please refer to the Product Release Notes or Installation Guide for the supported platforms for specific products and releases.

• **Microsoft Products:** ***For DecisionSpace and Select Landmark Classic Technologies***		
Microsoft Windows XP and Microsoft Windows 2003 Server **32 bit**	IA32	X86_64
Microsoft Windows XP and Microsoft Windows 2003 Server **64 bit**	X86_64	
• **Linux**		
Red Hat Enterprise Linux 5.0 **64 bit**	X86_64 (*Note: The supported platform will be the x86_64 architecture, but some applications will be built in a 32-bit format.*)	
• **Solaris:** ***For Landmark Classic Technologies Only***		
Sun Solaris 10 **64 bit**	SPARC *(Note: This supported platform will be the SPARC64 architecture, but some applications will be built in a 32-bit format.)* See the statement below, "Important Notice to Solaris Platform Users" about the ending of support for the Solaris operating system.	
• **Application Hosting Environment**		

A note about Red Hat Linux support

The principal supported version of Red Hat Linux for the 5000.X Synchronous Release of Landmark's product suite is Red Hat Enterprise Linux (RHEL) 5. This is the platform on which Landmark will be testing its Release 5000 suite of products. However, because of the timing of the RHEL 5 release (March 2007), Landmark developed its 5000.X applications and performed initial testing on RHEL 4U4. Therefore, Landmark will provide support to customers who decide to deploy 5000.X solutions on RHEL 4U4 or RHEL 5.

Go To "What's in this Release?"

Important Notice to Solaris Platform Users

After careful consideration and review of the needs of our customers, Landmark has determined that releasing products on the Solaris™ operating is no longer necessary. The last supported versions of Landmark applications on Solaris will be those working with version 5000.0.2.*x* of the OpenWorks® software. Going forward, Landmark is committed to Red Hat Enterprise Linux® and Microsoft Windows® as the operating systems for our products.

Landmark Customer Support will continue to provide support for Solaris products through March 31, 2011.

Supported Components from Other Vendors

The chart below lists embedded and supported components that are used by many products. For a complete list of what is included in each product, please review the product's Release Notes.

Embedded	Prerequisites	Graphics Cards
Oracle Database 10g Enterprise Edition	Microsoft .NET 2.0	NVIDIA Quadro FX family of cards
Blue Marble Geographics Calculator 6.3	Hummingbird Exceed 2007	
Sun Java 1.6	Microsoft SQLServer 2005	
ESRI MapObjects v2.4	Mozilla Firefox 1.4 or later	

Installing Landmark Application Manager (LAM)

The Landmark Application Manager is delivered as a separate application and is not included in the OpenWorks® application. For instructions on how to install this application, please review the *LAM Guide, Linux, Solaris and Windows Installation Guide*.

Go To “What’s in this Release?”

Third Party Applications License Agreements

Landmark uses various third party applications in its software. Information about third party applications is available for all products. The Release Notes will detail the third party information or define where the information is located. In addition, Landmark has included with most applications a file titled *Third_Party.pdf* which includes attribution and license information for all third party products used by Landmark. Third party information can be found at the following locations:

- In the Release Notes
- On page iii in the .pdf manuals
- In the online **Help**

Go To “What’s in this Release?”

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 ECCN’s provided on the Landmark Software Manager represent Landmark Graphics' 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 **FHOUEXP@halliburton.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.

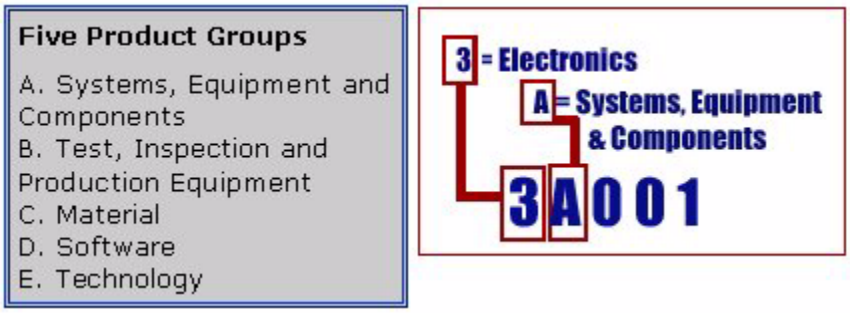
The URL is: **http://www.bis.doc.gov**

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**.

Go To “What’s in this Release?”



The ECCN Number, License Type, and the CCATS Numbers for this product can be found on the Landmark Software Manager.

Go To “What’s in this Release?”

Enhancements and New Functionality

Release 5000.0.0 contains major changes and new functionality. The primary new functionality for the Classic applications is the incorporation of the new Seismic Data Management functionality in OpenWorks®. It offers a high value to the management of seismic data in the end application.

This section includes enhancements for many of the Release 5000.0.0 products that will be released throughout 2008. It also contains new functionality for the products.

Because OpenWorks® enhancements are among the most far-reaching, they are listed first. After OpenWorks®, the products are grouped according to business lines and listed alphabetically within the groupings. More details of new functionality can be found in the New Features manuals or Release Notes for each point product.

For information on other products, click on these hyperlinks:

Go To "What's in this Release?"

OpenWorks® Software Release 5000.0.0

New Project Structure Optimizes Project Administration

Project administration has been simplified and optimized in OpenWorks® 5000.0.0. A project can now be a view or subset of another project, and the master and working projects in SeisWorks have been integrated into the new OpenWorks® project structure.

Seismic Projects: Seismic projects in SeisWorks no longer exist in Release 5000.0.0.

Views of an OpenWorks® Project

Projects have been renamed *project databases*. Each project database contains one or more *interpretation projects*. The interpretation projects are subsets or views of the data in the project database. Each interpretation project can have its own Cartographic Reference System (CRS) and lists of lines, surveys, and wells. With this new design, one copy of the data can have separate views, lessening the demands on computing resources and project and data administration. If data updates are needed, only the project database needs to be updated. Each interpretation project can be configured to automatically refresh the data in its view.

In SeisWorks, the master and working projects have been removed, and the OpenWorks® projects have taken the place of the SeisWorks projects. Project management is now provided by OpenWorks® Project Administration.

Seismic Data Management in the OpenWorks® Database

Seismic data is more tightly integrated in the OpenWorks® 5000.0.0 database. Some seismic data is cataloged and referenced in the OpenWorks® database. Other seismic data is stored in the OpenWorks® database.

- **Cataloged**: seismic datasets, 3D horizons, and pre-stack and post-stack seismic data
- **Stored**: 2D horizons, misties, static shifts, horizon lists, and fault lists

In OpenWorks® 5000.0.0:

- Seismic Data Manager allows you to manage the data it previously did, 2D and 3D surveys, other seismic data that previously SeisWorks utilities managed.
- By integrating seismic project information into the OpenWorks® database, Seismic Project Manager no longer exists in Release 5000.0.0.
- All project management now uses Project Administration in OpenWorks®.

To support the new data stored in the OpenWorks® database, Project Data Transfer (PDT) has also been enhanced to support the transfer of 2D horizons, misties, and static shifts.

Go To "What's in this Release?"

SeisWorks Projects Replaced by OpenWorks® Projects

OpenWorks® projects are restored into the database, and the data from the SeisWorks projects are restored to the location where seismic data is to be stored in the environment. When the OpenWorks® project is upgraded to Release 5000.0.0 in Project Administration, the SeisWorks project information is integrated into the OpenWorks® project database. Each of the working projects from SeisWorks can become an interpretation project of the project database, depending on the what the person upgrading the restored OpenWorks® project chooses. The configuration file, plist.dat, is used when upgrading an OpenWorks® project which has a seismic project associated with it; however, for a fully restored and upgraded OpenWorks® project in Release 5000.0.0, plist.dat is no longer needed.

Projects and Districts

OpenWorks® and its database now directly support districts. Districts allow a company to separate OpenWorks® projects and seismic data into more manageable and secure groups. They become especially useful when a company may have large numbers of projects and when a company wants to separate data by business unit for better data security or storage ownership.

In an installation of OpenWorks®, a company can decide whether it will implement districts or not. To implement districts, dir.dat and owdir.dat must be configured for each district, and a new file, district.dat, must be configured with the name of each district and the directory of each district's dir.dat and owdir.dat. Utilities, such as Project Administration and Project Status Tool, support districts in their interfaces. For example, when a user of OpenWorks® creates a new project in Project Administration, part of the project configuration includes selecting the district to which it will belong.

Datum Shifting

In Release 5000.0.0, seismic projects do not exist. Datum shifts are now stored in the OpenWorks® database. In OpenWorks®, datum shifting of both time and depth Z values is automatic, but with some exceptions. Time data are shifted from the datum of the data object to the project datum of the OpenWorks® project, where the data is stored. The replacement velocity configured in the project is used in the computation of the shift distance. Depth data are shifted from its original storage value to a value relative to sea level (0).

Datum shifting is performed on the following mapping and seismic data types:

- **Mapping:** contour sets, contour lines, fault center lines, fault polygon sets, fault polygons, grids, mapping polygons, mapping polygon sets, point sets, point set fields
- **Seismic:** seismic datasets, horizon data, fault segments, control points

  Fault plane tri-meshes are not datum shifted.

Go To "What's in this Release?"

Fault triangulations are stored relative to the project datum if they are in the time domain, and they are stored relative to sea level if they are in the depth domain.

By default, the older OpenWorks® utilities do not shift datums or perform unit conversion for the mapping data types. They are read and written as unaltered values, as they have been in previous releases. Datum shifting is the default for the seismic data types.

Seismic Data Manager and Map Data Manager show data affected by datum shifting. They also have the Datum Shift Z Values check box in their **View** menus to allow you to turn datum shifting off or on.

***Other Landmark Applications*:** In DecisionSpace applications, datum shifting is active as the default for both seismic and mapping data.

Data Model Enhancements

The data model in Release 5000.0.0 contains enhancements and removes unused parts of the OpenWorks® data model.

Enhancements

- Storage for seismic data (2D horizons, misties, static shifts, horizon lists, and fault lists)
- References to seismic data stored in flat files (seismic datasets, 3D horizons, and pre-stack and post-stack seismic data)
- Well location: Each Well Master table now has a Well Location table assigned to it. This table allows well data to be more easily transferred between an OpenWorks® database and the Well/Wellbore model of an EDM database or any database with a wellbore view.
- Storage for processing history
- Simplification of the fault plane trimesh model
- Storage for offset synthetics and vertical seismic profiles (VSPs) for Well Seismic Fusion

Go To "What's in this Release?"

- Reference table changes: Some validation (VC) tables have been converted to reference tables (R), and each reference table now has timestamp and source fields. Conversion to R tables also allows the one-step rename functionality provided in the new Data Domain Manager (DDM) utility.
- Storage for interpretation notes
- Storage for interpretation sets
- Storage for 3D earth model frameworks
- Remarks attributes increased to 200 characters
- Long remarks are now stored as vectors to provide the ability to capture long free-form remarks of unlimited size
- ID's generated with sequences not OW_UID_VALUES
- Data Dictionary (support for Reference Data Manager)
- Storage of additional list tables (grid lists, fault lists, and horizon lists)
- Support for automatic position log computation when adding directional surveys
- Support for automatic handling of tie points
- Simplification of the data model for DepthTeam Express

Removed Tables

- PDEN production data model: The PDEN tables have been replaced with the PDM tables, simplifying the production data model in the OpenWorks® database.
- ARIES Reserves Management
- VIP simulation grids
- gOcad model blobs
- OpenExplorer tables
- OpenWorks® culture model: These tables were replaced by ZGF files in OpenWorks® R2003.

Go To "What's in this Release?"

Development Kit Enhancements

The Development Kit for OpenWorks® 5000.0.0 has been updated:

- Includes functions to access the data in new tables of the OpenWorks® data model.
- Includes functions to support data change messaging provided by Oracle's Streams Advanced Queuing.
- Removes functions related to tables that have been removed.

The Development Kit is built with Microsoft's Visual Studio 8. For detailed information about changes in the Development Kit for OpenWorks®, see the documentation included in the Development Kit. The Development Kit for OpenWorks® is available separately from OpenWorks®. Consult your Customer Support Representative for more information about acquiring the Development Kit.

Redesigned Utilities

OpenWorks® 5000.0.0 includes several redesigned project management utilities and data managers. These new utilities and managers have the following benefits:

- Because they are created as cross-platform Java applications, they do not require X Window System or Motif support in any operating system.
- Components from Landmark's DecisionSpace products, enhancing OpenWorks® integration with more Landmark Software applications.
- Powerful table functions allow you to search, sort, view, and manipulate the data displaying in a project utility or data manager.

New Project Utilities

Project Administration (or Project Admin), Project Status, and Interpretation ID Manager have been rewritten, and in some cases, have new functionality.

New Data Managers

Curve Dictionary, Data Domain Manager (now allows editing of data dictionary as well as reference data), Map Data Manager, Seismic Data Manager, and Well Data Manager have been rewritten and have added functionality.

Go To "What's in this Release?"

Interpretation IDs

Interpretation ID Manager replaces the Interpreters utility. The interpreter name in R2003 becomes interpretation ID in Release 5000.0.0. An ID is a tag applied to a set of data by one person or by a group of people. The manager allows you to create interpretation IDs and control the list of users who have access to them.

- The interpretation IDs, along with their associated data, are presented in a table that allow you to sort, filter, and search the table; change the appearance of the table to make some data more prominent; and export rows of data to a file.
- You can edit an ID in the table or in a form view.
- Each user of a shared interpretation ID can have a different security access level when using the ID.
- The Description field in the Interpreters utility has become a Long Remark field that allows remarks of indefinite length.

Interpretation IDs can be public or private. Public IDs are the same as interpreter names with public ownership in R2003, since any user with access to the project can use them. Private IDs allow you to create an ID limited to only certain users. Each user added to a private ID has one of three security levels: owner, manager, or interpreter. An asset team can manage one or more private IDs to fit the purposes of the team.

Support for Oracle Streams Advanced Queuing (AQ) for Data Change Messaging

OpenWorks® now uses Pointing Dispatcher (PD) just for communications between its client applications. Oracle's Streams Advanced Queuing (AQ) now conducts data change messaging with the OpenWorks® database.

Advanced Queuing has several advantages:

- Changes to the data in an OpenWorks® project are reliably communicated to any application accessing the project across a network.
- Allows Landmark applications accessing the OpenWorks® database to more easily and efficiently monitor data updates from multiple workstations on a network in real-time.
- PD sometimes required special configurations and environment variables for some applications to be able to receive notifications about data changes. With AQ, those configurations are unnecessary. If the application can communicate with the OpenWorks® database, the application receives data change notifications.
- AQ messages can indicate the boundaries of a transaction with the database. The applications accessing the OpenWorks® database can then commit a set of change messages at the end of the transaction instead of at each individual change. This capability speeds up communication with the database.

Go To "What's in this Release?"

OpenWorks® Users are Now Internally Authenticated Users

OpenWorks® now uses the Oracle Secure Enterprise Password Store (Oracle Wallet) to store passwords to the database and to handle the security of the passwords.

When a new user is added to the OpenWorks® database, the user is associated with the user's name in the operating system. When the OpenWorks® user first starts an OpenWorks® application, the user must provide a password to the OpenWorks® database. The user name in the operating system and the database must be the same, but the passwords can be different.

When a user accesses an OpenWorks® database with a web-based application, the application prompts the user for a user name and password. Then, access to the data is allowed. Users can now change their Oracle password from the Command Menu.

Data Model Rationalization Between OpenWorks® and Engineer's Data Model (EDM)

OpenWorks® now includes a table for well locations. Each wellbore (Well Master table) is associated with a Well Location table that relates to the well/wellbore data model in EDM, allowing well data to be more easily transferred between databases. The data in the well location table is populated during the restoration/extension of a project. Manual intervention is not required to obtain this data.

Other Changes

Processing History: OpenWorks® now captures the data types of the input and output data and captures the parameters that transform the data from input data to output data. Specifically, the processing history retains interpretation knowledge and the context of the data. It allows you to revise interpretations with new data, and makes cleaning and archiving projects easier. It allows one team to easily hand off a project to another team, and can minimize productivity loss when the composition of an asset team changes. Processing histories can be manually created, edited, and managed in the new Seismic Data Manager. Some Landmark applications capture processing history in context.

Locally Managed Tablespaces: OpenWorks® project databases and the OpenWorks® schema now use locally managed tablespaces. When installing and configuring the OpenWorks® database, the system tablespace is locally managed. This change means that the system tablespace does not grow significantly when new projects are created in the database. Also, this change makes the OpenWorks® database consistent with Oracle's current recommendations. Because of this change, when a table is created, a storage clause cannot be used in the create statement.

Application Preferences: In the rewritten utilities and managers, you can save preferences. Besides user preferences, each application has default preferences, and some preferences can be set for the entire OpenWorks® site.

Go To "What's in this Release?"

New Error Logging Console: In the rewritten utilities and managers, a Tools menu allows you to display the Error Logging Console. The Error Logging Console allows you to view errors as they occur without resorting to a terminal window, and to dynamically set the error reporting level for the console window and the error log file separately.

Updated Geographic Component: Release 5000.0.0 includes components from GeoCalc 6.3 (from Blue Marble Geographics) for coordinate transformations.

Project Administration: Creation of OpenWorks® users is now in Project Administration. The old orauser script no longer exists in Release 5000.0.0.

Tight Groups: Wells and seismic lines (specifically, the `Seis_Geom_Set`, `Seis_Geom_Set_2D_V`, and `Well_Master` tables) now have a column for indicating whether the well or line is restricted (or tight). The setting of this column is taken into account when creating interpretation projects. If restricted data is included in the interpretation project, the manager of the interpretation project can then only allow access to the project those who belong to the tight group. This change makes the OpenWorks® data model more in accord with the data available from an Engineer's Data Model (EDM) database.

Arbitrarily Long List of Values in Data Dictionary: In R2003, the number of values for a field in a table was limited by the number of values that could be incorporated into 160 characters. In Release 5000.0.0, the data model now has an `OW_Data_Dict_Value` table which allows a field to have an arbitrarily long list of possible values.

Well Data Manager: Well Data Manager can show all computed attributes associated with well depths at the same time. It supports MD (measured depth), TVD (true vertical depth), and TVDSS (true vertical depth subsea) as in previous releases, but can now also show x- (East-West) and y-offsets (North-South) as an offset distance and an absolute distance.

Notes: Interpretation Notes allow an interpreter to retain information about an interpretation. A note can contain comments, drawing primitives defining a section markup, and references to external documents. Each note is tied to a position in 3D space, and can be displayed as a symbol with a label, when, for instance, a section or map is displayed in PowerView that contains an interpretation note. Any document referenced in a note is stored where the seismic files are stored for the project database. Notes are manage and are available in interpretation applications (like SeisWorks or PowerView).

Interpretation Sets: They allow an interpreter to group data objects, similar placing files into a hierarchical arrangement of directories or folders. Categories can be created to group interpretation sets. A category can define a workflow or interpretation process. Interpretation applications that use interpretation sets provide interpretation set templates. A template defines an empty hierarchical structure as an example of the structure of an interpretation set. The sets are managed and are available in interpretation applications (like SeisWorks or PowerView).

Sharing Interpretation Data: When creating interpretation projects, the interpretation data, such as mapping data, geologic cross sections, and well plans, can be shared between interpretation projects. Sharing this data is possible because each data type in Release 5000.0.0 includes information about its location, CRS, and bounding box. If the bounding box overlaps a project's

Go To "What's in this Release?"

AOI, and if the data and the project share the same CRS, the interpretation data appears in the interpretation project.

When viewing data in the project database containing the interpretation projects, the interpretation data is available if the CRS of the project database and the interpretation data are the same.

Changing Oracle Password: Since OpenWorks® now uses Oracle's internal authentication of users of the OpenWorks® database, OpenWorks® now provides you a means to change your Oracle password, the Change Oracle User Password menu option. The menu option is available in the Command Menu under the Project menu, and in Windows, the option is available in the Start Menu under **All Programs > Landmark > OpenWorks > Project Administration**.

Horizon Catalog: An interpretation project, like the old 2D working projects in SeisWorks, can have a very large number of horizons. With such a large number it may be impractical to view all of them at the same time, because of the number of horizons or because some horizons may not be presently important. In interpretation projects, you can limit the number of horizons that are viewed in the applications without actually removing the horizons from the project. Seismic Data Manager allows you to decide which horizons in the project are viewable.

Domain of Faults: Previously, the seismic fault data model used SSTVD and TIME domains as attributes for a fault. The SSTVD domain implied a sign convention of negative as below the datum, but in OpenWorks® the domain of this attribute is misleading. In Release 5000.0.0, the SSTVD values have been changed to depth values. When you restore and upgrade a project from previous releases, the SSTVD values are changed to depth values, and the domain becomes a required field. OpenWorks® also checks that legal values are entered for the domain. With this change, the conventions for faults and horizons are the same. The change affects the following data types: fault planes, fault segments, and control points.

Changes to Import/Export Format Files: The standard *owx* format files for ASCII Loader, Well Data Export, and Curve Loader have been updated for Release 5000.0.0. Both their contents and file names have changed. The older versions of the files have been discontinued and removed from the *ParentDir*`/OW_SYS_DATA/owioformats` and *OpenWorksHome*`/dat/wlx` directories. Other format files, which have been less used, have also been discontinued and removed. For a complete list of the discontinued and current format files, refer to the text file, `README.formats`, located in *OpenWorksHome*`/dat` .

The archive file, `Pre_R5000_OpenWorks_Format_Files.zip`, contains all of the discontinued format files. The archive is located in the following directory:

OpenWorksHome`/dat/Pre_R5000_OpenWorks_Format_Files/`

Go To “What’s in this Release?”

Utilities Removed from OpenWorks® Software

The table below lists the differences between the sets of utilities in OpenWorks® in the Linux and Windows operating systems. The table also displays the utilities removed from OpenWorks® in Release 5000.0.0. Utilities not removed from Release 5000.0.0, and which are available in the Linux operating system, are available in the Solaris operating system.

Utility Name	In Linux?	In Windows?	Removed in 5000.0.0
3D Wellbore Viewer	No	No	Yes
Checkshot Data Manager		No	
Cultural Loader	No	No	Yes
Culture Data Manager	No	No	Yes
Database Sanity Checker	No	No	Yes
Deviation Data Manager		No	
Environmental Status Tool		No	Yes
Hardcopy Routing	No	No	See page 25.
Image Edit		No	Yes
Lithologic Symbol Editor		No	
Map Data I/O		No	
Map Overlay Manager		No	
MFD Cultural Loader	No	No	Yes
NetID		No	
orauser			Yes
Project Change			Yes
Project/World Basemap		No	Yes
RSvD		No	
Screen Capture		No	Yes
Well Symbol Editor		No	
Workgroup	No	No	Yes

Go To “What’s in this Release?”

Hardcopy Routing: The Hardcopy Routing functionality (plotter support) has been removed from the Command Menu in Solaris as well as the other options in the Utilities menu and the Utilities menu itself in the Command Menu in Solaris and Linux. However, in Solaris and Linux, the OpenWorks® files for hardcopy routing remain in the OpenWorks® installation directory (`$OWHOME/hardcopy`).

Go To "What's in this Release?"

Drilling and Completions

Engineer's Desktop™ (Entire Suite of Products)

- **Platforms and Databases.** The Engineer's Desktop suite of applications is now available on Windows Vista Enterprise for the 5000.0.0 release. Supported databases for 5000.0.0 are Oracle 10g, Microsoft SQL Server 2005, and Microsoft SQL Server 2005 Express.

  Additional platforms supported for the 5000.1.3 and higher releases are: Windows XP, SP3, 32-bit; Windows Vista SP1, 32-bit and 64-bit; Windows 2003 Server SP2, 32-bit; Windows 2003 Server SP1, 64-bit; Windows 2008 Server, SP1, 64-bit; Citrix Presentation Server 4.5; Citrix XenApp 5.0; Oracle 10.2.0.4 Server, 64-bit; Oracle 10.2.0.4 Client, 32-bit (64-bit Client not supported); SQL Server 2008, 64-bit; and SQL Server Express 2005, SP3, 32-bit.

- **5000.1.0 Update to the 5000.0.0 Release.** In this update:
  - The Microsoft Vista operating system was supported.
  - New LAM licensing was added, including the new Mobile Checkout feature which allows the user to "borrow" a license for offsite work.
  - The Well Cost™ application was added to the suite for the first time.
  - Well Cost enhancements include: ability to construct a sequential Operations Program and transfer well planning information to OpenWells was added; probabilistic workflow improvements were made; for the Time Vs. Actual plot, offset wells are now representative of the actual depths, not cut off at the same depth for all; Offset Well Times plot was added; Auto-Calculate and Calculate buttons were added to the toolbar; support for SI units was implemented; support for regional settings to support internationalization functions based on the Windows Regional Settings locale was implemented; and several spreadsheet improvements were made.
  - StressCheck made the following enhancements: Temperature Deration is now related as a child of Grade in the database, hence accommodating changes to the Temperature Deration for a Grade *without changing the Material*. Also, Tubular Properties Import/Export was added, and custom Tubular Properties are now stored as inventories associated with each Design.
  - Several enhancements were made to the EDM Administration Utility and the Common Well Explorer.
  - OpenWells made a number of usability enhancements including: Wizards for common workflows; "Today's Well" interactive graphic; graphical Rig Equipment Editor; Inherent Rig Operations and Equipment entry; Improved Hole Sections data entry; integration between the Engineering Hole Plans and Hole Sections area of the OpenWells Well Planning Report; Sub Assembly support; and Output Reporting enhanced to improve appearance and include COMPASS plots and Wall Plot Composer plots within the OpenWells output reports.

Go To "What's in this Release?"

— PROFILE enhancements include supporting Sub Assemblies and adding/enhancing Data Boxes for several fields. In addition, Data Track and Data Box enhancements were made to the Wall Plot Composer.

— Real-Time View enhancements include: Well Explorer was added to the interface to enhance usability and leverage EDT software integration with other Drilling applications; Drag and Drop of individual log curves was added; and logs can be opened, imported, renamed, and deleted from Well Explorer.

— WELLPLAN made the following enhancements:

- *Cementing*: Updated OptiCem™ software version to 6.1.4 and made other improvements
- *Torque/Drag*: WELLPLAN stretch calculations have been enhanced to include stretch due to thermal expansion of materials in order to predict more realistic stretch.
- *Torque/Drag*: Options for entering Friction Factors have been simplified.
- *Torque/Drag*: Geothermal Gradient dialog was added.
- *Hydraulics*: Mud Pits were added to Hydraulics Circulating System. This functionality provides the option to calculate the flowing fluid temperature from the mud pit to the drillstring at the surface using the mud tank geometry and environmental conditions such as wind speed, ambient temperature.
- *Hydraulics*: Maximum Pump Power, Maximum Allowable Pump Rate, and Standpipe Pressure were added.
- *Hydraulics:* Minimum Flowrate to Clean Hole added to Pressure Loss Plot as a line of interest for quick reference.
- *Surge*: Optimize trip speed option was removed from Surge/Swab Operations Data. It is now possible to use the Optimized Trip Schedule to view results for entire open hole.
- *Surge*: Surge/Swab Optimized Trip Schedule plot is enhanced to show Maximum and Minimum Trip Speeds.
- *Surge*: All the Transient Response Plots are grouped together.
- *Surge*: Plots are enhanced to allow usage of MD/TVD, and EMW/PSI toggles, and legends now display trip speeds.
- *Well Control*: Kill Sheet quick view results are enhanced to show the Kill Mud Weight Details, with and without Trip Margin.
- *Well Control*: Well Control plots were enhanced to show the Jar positioning.

Go To "What's in this Release?"

- *Stuck Pipe*: Stuck Pipe calculations were enhanced to show the Casing Burst and BOP Pressure Ratings.
- *BHA*: Overgauge field was removed from the BHA module. Use Volume Excess in the Hole Section Editor to define the amount of washout.
- *Real Time*: Real Time Hydraulics calculations were enhanced to support Mud Temperature Effects and Back Pressure.
- *Real Time*: Real Time plots were enhanced to configure the actual scatter data.
- *Reports*: All reports have been reorganized to display tables in logical order and are sequentially numbered. They have also been updated to accommodate new changes, address outstanding defects, and improve formats.
- *General Engineering*: Convert Depth/EMW has been updated with Maximum Pore Pressure and Minimum Fracture Pressure for Engineering analysis.
- *General Engineering*: PSI/EMW and MD/TVD toggles support across all of the engineering plots and tables (within the application, Wall Plots).
- *General Engineering*: Right-click copy to clipboard support for all grid data.
- *General Engineering*: Geothermal Gradient Plot added to Geothermal Gradient dialog.
- *General Engineering*: WELLPLAN software status messages are Case-specific and color-coded to denote Errors, Warnings, and Information.
- *General Engineering*: Bit Specifications dialog is enhanced with Bi-Center bit parameters.
- *General Engineering*: Simplified the design of the Hole Section Editor.
- *General Engineering*: Maximum Allowable Pump Rate was added to Circulating System.
- *General Engineering*: Enhanced the design of the Fluid Editor by presenting a Simplified Fluid Editor for Solid Mechanics modules, and an Advanced Fluid Editor for Fluid Mechanics modules.
- *General Engineering*: A 'Close All' option was added to the File Menu, allowing the user to close several open Cases at the same time.
- *General Engineering*: Disable icons for modules that are not licensed.

Go To "What's in this Release?"

- *General Engineering*: Now supports negative string components in the String Editor.

- A number of critical defects were fixed for all applications.

See the *EDT 5000.1.0 Release Notes* for details.

CasingSeat™ Software Application

- **Platform**. CasingSeat is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.
- **New Default Tabs.** Tabs are saved at the Design level. In the past, tab layout was saved by individual users. Now when a Design is saved, the tab layout and content are saved as the default view setting for the Design. The new tab settings become the view for all other users who open the Design.
- **Internationalization.** CasingSeat is now designed to support regional settings in Windows.
- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders allow users to organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **Formations Added to the Associated Data Viewer.** They allow formations to be copied between Designs.
- **New Assemblies Added to the Associated Data Viewer.** They have copy/paste functionality: Casing. Not valid for Actual Designs.
- **Catalogs Added for Well Completion Components.** Support for these catalogs was added to OpenWells, PROFILE, WELLPLAN, and Catalog Editor.
- **WELLCAT** was added to the EDT suite of applications for the first time in the 5000.1.1 release. Also, some Common Well Explorer enhancements were made. This update release improves the import/export and sharing of Grades, Pipes/Connections between StressCheck and WELLCAT, improves the integration between StressCheck and WELLCAT, and repairs critical defects affecting key StressCheck and WELLCAT application functions.
- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

COMPASS™ Software Application

- **Platform**. COMPASS is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.

Go To "What's in this Release?"

- **Targets.** They can now be assigned to additional hierarchical data levels, including Project, Site, Well, Wellbore, and Design.

- **New Report Manager Version.** This new version will reduce memory consumption and contains various improvements for report generation.

- **Printing.** It is now possible to print, or use print preview, from the Survey and Plan Editors.

- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders allow users to organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.

- **Integrated WITSML.** It allows the creation of OpenWire Client pipelines from the Well Explorer tree to load data into the EDM database directly from a remote WITSML server.

- **OpenWire Client.** It can be launched directly from the Well Explorer with a right-click menu command at the Database level.

- **Column Order on the Survey and Plan Editors.** It can now be changed.

- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

Data Analyzer™ Software Application

- **Platform.** Data Analyzer is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.

- **Metadata Update.** The Selection Tree metadata used for both Data Analyzer and the Data Validation feature within OpenWells (including EDM Administration Rule Book Editor) has been updated to reflect data model changes and additions that are new for this release. This includes being able to query data in the new Completions Catalogues, Multi-Wellbore Well Planning, and Oilfield Waste Management extensions to OpenWells.

- **Subsequent Release Enhancements and Fixes**. The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

OpenWells® Software Application

- **Platforms.** OpenWells is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.

Go To "What's in this Release?"

- **Planning of Multilateral Wells.** The Well Planning input form was enhanced to enable planning of multilateral wells, so that multiple wellbores and designs are now supported.
- **Completions Catalogs.** Enhancements were added.
- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders allow users to organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **Catalogs Added for Well Completion Components.** Support for these catalogs was added to OpenWells, PROFILE, WELLPLAN, and Catalog Editor.
- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

PROFILE™ Software Application

- **Platform.** PROFILE is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.
- **Extended Planning and Reporting.** The primary focus for this release of PROFILE has been to extend planning and reporting for Completions and Multi-Laterals (OpenWells) through new Completions equipment catalog selection architecture and associated completions-related enhancements. The goal is to enable completions and well services teams to better document and manage completions from planning to installation and management through to abandonment. In addition to the catalog selection architecture, assembly and component description interfaces are extended so that additional information and supporting documentation can be saved with the data. In addition, PROFILE is now extended to support description and visualization of equipment attached to Casing and Completion assemblies.
- **Completion Catalogs Selection.** This feature is now enabled in the Well Designer Wellbore Equipment and Wellheads tabs. In the Wellheads tab, Completion Catalogs are grouped by wellhead components and hangers in accordance with Catalog Editor organization.
- **New Equipment Section Types.** To support better segregation of different types of completion tools, a number of new equipment section types with supporting component type lists have been added to the Landmark standard list of equipment for this release.
- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders allow users to organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **Catalogs.** They were added for Well Completion components. Support for the catalogs was added to OpenWells, PROFILE, WELLPLAN, and Catalog Editor.
- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

Go To "What's in this Release?"

Real-Time View™ Software Application

- **Platform.** Real-Time View is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.
- **Key New Features.** This release of Real-Time View sees the introduction of a number of key new features that enable operators to manage more effectively both time-based and depth-based log data within their Engineer's Desktop environment. These improvements include:
  - **Depth-based log storage and visualization**. Real-Time View has been extended to also support depth-based logs. A new LAS import feature is available for Depth-based logs so that log files available in that format can be imported, stored in EDM, and visualized within Real-Time View.
  - **Log and Curve Header Editor**. For active logs, a new Log Header Editor feature is available from the Tools menu (Tools > Edit Log Header…). This feature enables engineers to review and edit Log and Curve Header information inaccessible in previous versions of Real-Time View.
  - **Internationalization**. Real-Time View has been extended to enable the user interface text to be translated into other languages.
  - **WELLPLAN Integration**. You can now use Real-Time View Template Viewer to display Depth-based drilling data logs within WELLPLAN. This feature allows real-time data imported into EDM via OpenWire Client to be displayed inside WELLPLAN for a particular Design/Case. The capability provides the engineer with a valuable reference when comparing predicted actual loads against those actually measured during well construction.
  - **Well Explorer Virtual Folders Added to the Well Explorer Tree**. These folders let you organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

StressCheck™ Software Application

- **Platform.** StressCheck is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.
- **Tab Layout.** Default tabs were added. (Tabs are saved at the Design level.) In the past, tab layout was saved by individual users. Now, when a Design is saved, the tab layout and content are saved as the default view setting for the Design. The new tab settings become the view for all other users who open the Design.
- **Viewing of Classic Well Schematic.** You now have the option to view the Classic Well Schematic. When StressCheck is installed, the default schematic view displays. To change to the Classic view, select **Tools > Options** and activate the Classic Schematic View checkbox. Deactivation of this checkbox will return the schematic display to the default setting.

Go To "What's in this Release?"

- **Internationalization.** StressCheck is now designed to support regional settings in Windows.
- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders allow users to organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **New Assemblies.** They were added to the Associated Data Viewer with copy/paste functionality: Casing, Tubing. Not valid for Actual Designs.
- **Catalogs.** These were added for Well Completion components. Support for these catalogs was added to OpenWells, PROFILE, WELLPLAN, and Catalog Editor.
- **Subsequent Release Enhancements and Fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

WELLPLAN™ Software Application

- **Platform.** WELLPLAN is an application on Engineer's Desktop 5000.0.0. and higher. Supported on additional platforms rolled out in the EDT 5000.1.3 software release.
- **New Friction Calibration Torque Drag Chart.** This new feature allows for graphical calibration of friction factors.
- **New Plot.** The pressure to break the gel strength at various times can be determined using the Pressure-ECD Chart (Pressure: Pump Rate Fixed).
- **Back Pressure Available in Analysis.** You can use the Pressure: Pump Rate Fixed Analysis Mode and the Pressure: Pump Rate Range Analysis Mode.
- **Reverse Circulation.** This procedure, which pumps cement and spacers directly down the annulus, can now be modeled.
- **Well Explorer Virtual Folders Added to the Well Explorer Tree.** These folders let you organize data items (such as Projects, Wells, Designs, etc.) in a customizable hierarchy that can be up to three levels deep.
- **Integrated WITSML v. 1.2 Support.** This feature allows creation of OpenWire Client pipelines from the Well Explorer tree to load data into the EDM database directly from a remote WITSML server. We also support a limited number of WITSML 1.3.1 objects (Well, Wellbore, Log, Trajectory).
- **OpenWire Client Pipelines.** These can be created directly from the Well Explorer. You can launch the Real-Time View application directly from the Associated Data Viewer and use it to compare actual and planned log data.
- **Catalogs.** These were added for Well Completion components. Support for the catalogs was added to OpenWells, PROFILE, WELLPLAN, and Catalog Editor.

Go To "What's in this Release?"

- **New Assemblies.** These were added to the Associated Data Viewer with copy/paste functionality: Casing, Tubing, and Drillstrings. Not valid for Actual Designs.
- **Subsequent Release enhancements and fixes.** The enhancements described above are for the 5000.0.0 release. For enhancements and fixes made in subsequent releases, see the *EDT Release Notes* for that release.

EDM AutoSync™ Server Software Application

- **Platforms.** EDM AutoSync Server runs on the same platforms as the Engineer's Desktop suite of products and is installed on machines running Windows 2003 or Windows 2008 Server.
- **Synchronization**. Supports automated data replication of EDM databases (2003.16.1.15 and higher and 5000.1.0 through 5000.1.5) for data from Compass and OpenWells between Regional and Corporate offices.
- **Update for 5000.1.5.** Rig to Regional manual synchronization allowed with the installation of EDM AutoSync Client 5000.1.5

EDM AutoSync™ Client Software Application

- **Platforms.** EDM AutoSync Client 5000.1.5 runs on the same platforms as the Engineer's Desktop suite of products including Windows XP and Vista, both 32-bit and 64-bit.
- **Synchronization.** Supports manual data replication of EDM databases for Compass and OpenWells.
- **Integration with OpenWells 5000.1.5.** Allows direct well assignment to EDM AutoSync Client for synchronization.

3D Drill View KM™ Software Application

- **Platforms.** 3D Drill View KM is a DecisionSpace application. For Release 5000.0.0, 3D Drill View KM will be available on the official Release 5000.0.0 Linux and Windows XP platforms, and will access OpenWorks® Software Version 5000.0.0 on Oracle 10g.
- **Create Knowledge Attachments in 3D View.** To create a Knowledge Attachment in the 3D View, right-click on a wellbore and select Add EDM Knowledge Attachment, or Add DIMS Knowledge Attachment depending on the drilling database you are using. Note that you must have checked the Enable box on the corresponding KM EDM or KM DIMS tab.
- **Knowledge Attachment Symbols Stored in EDM Database**. KM symbols are now stored in the EDM database. (Prior to R2003.19.1, the symbols were stored in files.) Any symbols stored in files will be uploaded into the EDM database the first time you open the database.

Go To "What's in this Release?"

- **3DDV KM Runs on Linux**. 3DDV KM now runs on Linux and can connect to either Oracle or SQL Server EDM databases.

- **Select All and Clear All Buttons.** The buttons were added to the Choose Items dialog box to improve its usability.

Collaborative Well Planning

- **Software Family in the DecisionSpace Environment.** It now includes AssetPlanner, TracPlanner, PrecisionTarget, and the new Field Scenario Planner applications.

- **Platforms.** For Release 5000.0.0, the Collaborative Well Planning applications will be available on the official Release 5000.0.0 Linux, Solaris, and Windows XP platforms and will access OpenWorks® Software Version 5000.0.0 on Oracle 10g.

- **Manual Targeting**. Several enhancements were included to allow better use of geologic models and to provide more control when creating targets for both manual and automatic planning.

- **References to OpenWorks® Saved in OpenWorks WellPlanning Projects.** WellPlanning objects created from OpenWorks® wells are saved with the OpenWorks® WellPlanning project. Therefore, OpenWorks® will automatically load these wells when the OpenWorks® well is opened.

- **Recommended Surface Location or Kickoff Depth Based on Hold Angle.** The software can recommend a surface location or kickoff depth based on a specified hold angle. The surface location or kickoff depth will be calculated using a hold angle as close as possible to the requested hold angle.

- **Sidetrack Plan Type Added to the AssetPlanner Advanced Mode**. AssetPlanner can now create sidetracks from existing or planned wells. Sidetracks can be based on three plan types, including sidetrack, horizontal sidetrack, and S-shaped sidetrack. It is possible to restrict the creation of sidetracks to a certain well type such as shut-in, etc.

- **Snap Penetration Points in Reference Targets**. When working with TracPlanner, use **Plans > Snap Reference Targets** to move the reference target penetration point to the point where the wellbore intersects the target. (The default penetration point for the reference target is the center of the target.)

- **Casing and Liner Data.** A Casing tab has been added to the Well Plan Properties dialog box. Casing and liner data available in OpenWorks® are displayed (read-only) on this tab. When creating a new plan, data can be entered into this tab. This data is used when creating sidetracks to ensure the minimum inside diameter criteria is met.

- **Improved Sidetrack Options.** Existing sidetracks now have the same planning options as new sidetracks. This functionality includes investigating alternative millout depths within a specified distance from the current millout depth. You can specify a minimum inside diameter

Go To "What's in this Release?"

to determine if a sidetrack is possible at any depth by comparing this diameter to the casing and liner data.

- **New Setting.** Set **Back TVD - Use Plans > Apply SetBack** to ensure the wellpath has the same inclination and azimuth from the last target to the specified (Set Back) TVD above the second to last target as it does between these two targets. This functionality applies to surface or platform plans using Optimum Align and consisting of at least two targets.
- **Plan Optimization Enhancement - Optimization.** It now includes penetration points, kickoff depths, and millout points, as well as automatically testing for more efficient plans using reference targets. Anticollision and hazard avoidance will be considered if the AssetPlanner module is licensed.
- **Table Editing.** Several changes were made to improve table editing. Buttons were renamed for consistency, and cell contents are automatically overwritten when typing begins in the cell.
- **Editing of Well Types.** It is now possible to change the type of a well (producer, injector, etc.). If the well is an OpenWorks® well, the change is only within the context of the current Well Planning project and does not change the actual OpenWorks® type.
- **Saving and Retrieving Plan Parameters.** In AssetPlanner and ScenarioPlanner, plan setups can now be saved and retrieved for later use.
- **Improved Completion Calculation.** A parameter titled "Default Reservoir Penetration" has been added to the Costs tab in AssetPlanner. This field is used to determine where to begin completion costs. In the past, completion costs were based on the perforation length. For wells without a perforation length, a zero length completion interval resulted.
- **Editing Target, Plan, and Scenario Parameters.** Any numeric column can now be edited and saved to the project. Columns can also be added or deleted. Note that this save applies only to the Well Planning project and does not affect OpenWorks® data or wbp files.
- **Importing Paths as TurnPoints.** Turn points can now be derived from imported survey data.
- **New Plan Type Parameters.** Additional parameters were added to several plan types.
- **Field Scenario Planner**. A new module titled Field Scenario Planner has been added. This module includes three modes: Scenario Setup, View Scenario Set, and Scenario Target Analysis.
  - The **Scenario Setup** mode facilitates the creation and editing of a set of development scenarios.
  - The **View Scenario Set** mode is used to compare the scenarios created using the Scenario Setup mode.
  - The **Scenario Target Analysis** mode is used to compare scenarios on a target-by-target basis.
  - **Scenes.** A new Scenes tab takes advantage of AssetView's multi-scene, multi-view functionality.

Go To “What’s in this Release?”

- **EDM Import and EDM Export - EDM Import and EDM Export Options.** These have been added to the File menu. Use these options to import or export data between Well Planning and an Oracle EDM database (version 2003.16.0 or later).

- **Surface Grids.** You can now use surface grids when you are working with AssetPlanner. For example, a sea floor grid can be used to obtain water depth. Using the water depth from the grid, AssetPlanner can put platforms in a specified water depth. You could also use a topography grid to place platforms or wells only where the surface is less than a certain inclination.

- **Site Slot Templates Setups.** These can now be saved. The site setup that is saved can include multiple templates and/or individual wells. After the setup is saved, it can be used as a basis for other sites.

OpenWire® Client Software Application

- **Platforms.** For Release 5000.0.0, OpenWire Client 5000.1.4.0 is available on Windows Vista (32-bit and 64-bit), Windows XP Professional, Windows 2003 Server, Windows 2008 Server, and Windows 7.

- **Supported Versions.** OpenWire Client will support WITSML version 1.3.1 as well as version 1.2.0 for the standard objects.

- **Browser-based Application.** OpenWire Client software requests WITSML data documents from a WITSML Web server, translates the WITSML data documents into rows and columns (relational database format), and writes them to Landmark's OpenWorks®, Engineer's Data Model (EDM), or Schlumberger's GeoFrame database.

- **Integrated G&G Workflows.** Real-time data can be automatically and continuously delivered to "listening" OpenWorks-enabled applications through the OpenWorks Pointing Dispatcher (PD)™. Landmark programs such as GeoProbe®, PetroWorks®, PowerView®, Well Seismic Fusion™, etc. support OpenWire Client workflows that use this feature.

- **Integrated Engineering Workflows.** Real-time data can be automatically and continuously delivered to "listening" EDM-enabled applications using the Simultaneous Activity Monitor (SAM) function. COMPASS™, OpenWells®, and WELLPLAN™ software support OpenWire Client workflows that use this feature.

- **Support for Reports Objects.** OpenWire Client now supports the reports objects for simplifying the data entry into OpenWells when data is available in a digital format.

  For more information, see the *OpenWire Client Software Release Notes.*

Go To "What's in this Release?"

OpenWire® Server Software Application

- **Platforms.** For release 5000.0.0, the OpenWire Server 5000.1.4.0 application is available on Windows® XP, Windows® 2003 Server, and Windows 7.
- **Supported Versions.** OpenWire Server software supports WITSML version 1.3.1 for SDK-based queries to OpenWorks® and EDM databases. For File-based queries, both WITSML versions 1.2.0 and 1.3.1 are supported.
- **Integrated Workflow**. Acts as a server that accepts queries from WITSML clients, such as the OpenWire Client application. OpenWire Server software serves the WITSML data from historical files, or from an EDM or OpenWorks® database, to the requesting WITSML client.
- **Support for OpenWorks® Database**. OpenWire Server software connects to OpenWorks® version 5000.0.2.5 database.
- **Support for EDM Database.** OpenWire Server software connects to EDM version 2003.16.1.x, 2003.21.x, and 5000.1.0 to 5000.1.8 databases.

  For more information, see the *OpenWire Server Software Release Notes*.

Wellbore Planner™ Software Application

- **Platforms.** Wellbore Planner is now available on the official Release 5000.0.0 Linux and Solaris platforms and will access OpenWorks® 5000.0.0 on Oracle 10g.

Go To "What's in this Release?"

Geological and Geophysical Technologies

These applications use the new Seismic Data Management functionality in OpenWorks®. For more information, see **Seismic Data Management in the OpenWorks® Database** on page **15**.

DepthTeam Express™ Software Application

- **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.

- **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®.

- **Sharing of Models**. TDQ and DepthTeam Express models are stored in the master project and not the Interpretation Project, so the model can be shared. When creating a new DepthTeam Express model the user will see the Seismic Survey instead of a list of SeisWorks Projects. Because DepthTeam Express models are stored as OW external data a separate upgrade will be needed to use older models in R5000.

- **Simplified and Optimized Project Administration**. This change eliminates the need for seismic projects in SeisWorks. Master and working projects have been integrated into the new OpenWorks® structure.

- **Identification of Horizons**. They are identified by name, version, interpreter, and attribute.

- **Datum Behavior**. Modifications in datum behavior make it work in conjunction with the automatic datuming of seismic data provided by the OpenWorks® project optimization in Release 5000.0.0. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to the 3D survey and the 2D line seismic data. They work together to provide dynamic shifting of the seismic data to the datum of the IP. Because the datuming or start time modification of the seismic data is being performed on the OpenWorks® side and is external to the DTE application, DTE now includes some minor changes concerning the initial Time datum setting and the updating of the datum when seismic data is selected for display. In previous releases, the initial DTETime datum would be set by selecting a SeisWorks project. You could then modify the datum value before completing the initialization of a DTEmodel. For Release 5000.0.0, the initial time datum will be set to the datum of the Interpretation Project that you are using. This change is required to maintain integration with SeisWorks, which also uses the IP datum when initializing. Because the

Go To “What’s in this Release?”

seismic data is tied to this datum, you will not be able to modify the datum during initialization. You can, however, modify the datum when creating a new model.

GeoProbe™ + ezModel™ Software Applications

- **OpenWorks® 5000.0.0. Port.** For Release 5000.0.0, the OpenWorks® data model has been streamlined to reduce data duplication. Now, you can view subsets—called interpretation projects—of a project database; the data in the interpretation project is shared dynamically by reference. In addition, seismic and horizon data can have a processing history attached to them. GeoProbe's data structure has been modified to accommodate these changes.

- **Multi-Survey States.** GeoProbe's data structure has been re-configured to take into account individual surveys located within a larger project. Now, Multi-Survey instances in GeoProbe can be saved into a single state file.

- **Data on Demand.** In addition to loading volumes into shared memory, you can now load volumes directly from disk into GeoProbe using Data on Demand. When you use this new *.d3d disk caching format, loaded volumes are no longer limited to the amount of memory on a given system. Therefore, you can load large data volumes without compromising visualization speed.

- **Seismic 2D Data Direct from SeisWorks.** Seismic 2D Data can now be loaded into GeoProbe directly from SeisWorks. swFault segments are easily interpreted on these 2D lines and saved back to OpenWorks®. In addition, horizons are picked using ManuTrack and can be interpolated on demand using the SeisWorks gridding library.

- **Direct Data Access.** Data loading has been reconfigured to remove the requirement for an external DataServer. This change has greatly optimized the loading of swFaults, Horizons, and 2D Data; they are now loading 10 to 20 times faster than in previous versions.

- **Culture Object.** A new Culture object lets you load and manipulate ZGF layers. These culture files can be clipped to volume extents, and individual layers in single files can be enabled and disabled from view.

- **Blending Volumes into a Single Display.** Advances in graphics card development give GeoProbe the ability to “blend” two volumes into a single display. For example, using a seismic amplitude volume as a base volume, you can now overlay a velocity volume on the seismic. The second volume still has a color map of its own, and transparency values on this color map determine the saturation of the volume on the display. In addition, by using the dynamic waveform display, you can display wiggle traces on the faces of a Probe. Parameters that determine the size, spacing, and overall appearance of these traces can be set.

- **Horizon Curvature.** A variety of Horizon Curvature attributes are now available for display on the selected horizon. These attributes aid in the prediction of fractures and faults.

- **Horizon Combo Mambo.** Using the same technology as co-rendering volumes using Volume Combo Mambo, horizons can be colored using "bump mapping.” This visualization technique allows the simultaneous display of two attributes, one defined by color and one by shading.

Go To “What’s in this Release?”

The result is similar to that produced when light shines at an angle on a surface. Bump mapping adds per-pixel surface relief shading, increasing the apparent complexity of the horizon, defining faults and channel features that previously you were unable to see.

- **Horizon Slice.** Horizons can now be moved along the X, Y, and Z axes, either manually, using the slider bars, or automatically, using Autoslice. These horizons can by colored by the active volume, and the display will update as the horizon slices.

- **ezModel Additions.** More options have been added for working with horizons in the structural model. Horizons can now be sealed against one another, based on the order they occur in time/depth. In addition, specifying each horizon interval's minimum thickness allows for a wider variety of stratigraphic models. Editing capabilities for fault polygons have also been added.

- **Well Section.** This new feature creates a vertical plane of seismic data through the path of the selected wellbore. These planes display the data around the wellbore as well as any enabled horizon and fault interpretations that intersect the plane.

- **User Preferences**. Tabs for swFaults and ezFaults have been added to the User Preferences dialog box. They let you configure display and interpretation settings that will persist in the GeoProbe session.

- **Hotkey Reconciliation**. Horizon and fault interpretation hotkeys have been changed or added as applicable to comply with the standards for SeisWorks and PowerView.

- **Usability Improvements.** All objects in the GeoProbe viewer are now selectable and can be disabled using MB2. The object's full menu can be accessed using MB3.

PetroWorks® Software Application

- **OpenWorks® Project Optimization.** The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data, major enhancements to the Interpretation ID Model, the addition of metadata and Processing History Model, redesigned Data Managers, and OpenWorks® and Engineer's Data Model (EDM) rationalization.

PostStack™ Software Application

- **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and

Go To “What’s in this Release?”

the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.

- **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®.

- **Data Loading**. For Release 5000.0.0, the data loading process will be similar to that in Release 2003. However, some modifications were made to enable PostStack to work properly in the new Release 5000.0.0 project structure. All 2D and 3D seismic data should be loaded into the main OpenWorks® Project (All Data project). After the data is loaded, it will be available to the Interpretation Projects automatically through database triggers or manually by updating the Interpretation Project by AOI, 2D Line List or 3D Survey selection.

- **Datum Behavior**. With Release 5000.0.0 there is a modification in the datum behavior from Release 2003. PostStack works in conjunction with the automatic datuming of seismic and horizon data provided by the OpenWorks® project optimization. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to 3D surveys and 2D lines. They work together to provide dynamic shifting of the seismic and horizon data to the datum of the IP (or OpenWorks® Project). From within PostStack, the data will be processed at the datum of the IP. Therefore, it is important that the correct datum is specified when data loading.

- **Processing History**. In previous releases of PostStack, processing history for 3D data only was stored as abbreviated comments and accessed through Seismic Info in SeisWorks. PostStack now stores the complete job.output file as a long remark. This information, as well as additional metadata, is now stored for both 3D and 2D and can be accessed through OpenWorks® Seismic Data Manager.

PowerCalculator® Software Application

- **New Data Types.** They include the following:

  — Support for 2D horizons for a variety of math computations.

  — Support for OpenWorks® grids for complex math computations. In general, the grids can be used interchangeably with 3D horizons, making for some very powerful, yet simple, workflows.

  — OpenWorks® polygons, which can be used in some new functions that support processing of the grid information.

- **New Calculations and Modes.** They include the following:

  — Calculations can be executed in “Multiple” mode, which enables operations between 3D horizons in different seismic projects.

Go To "What's in this Release?"

  - The QuickView now supports the display of multiple data simultaneously. This enhancement lets you quickly evaluate if and how disparate data types overlap within regions.

  - A robust spatial interpolation algorithm is added for 3D horizon data. By being a part of the PowerCalculator processing flow engine, this algorithm enables a single button click to fill, smooth, and clip within the interpreter's favorite set of algorithms.

  - The Blank function applies a specific polygon set, containing inclusive and/or exclusive polygons, to a 2D or 3D horizon, or to an OpenWorks® grid.

- **New Algorithms.** Multiple surface curvature algorithms and surface derivative algorithms are available.

- **Processing History on Horizons and Grids.** They can now be viewed directly from PowerCalculator.

- **Extraction of Seismic Attributes to a Horizon.** The ability to do so is now available for 2D horizons.

- **QuickView.** It now supports 2D seismic volumes and fault centerline sets.

- **Rapid Data Display**. It has options for examining which 2D lines have horizon data.

- **Running Saved Calculations**. You can now do so from a command line.

PowerView® Software Application

- **Notes.** This enhancement provides advanced tools for interpreters to add *x, y, z* location markers containing text, images, and links to documents. Notes can also be attached to other data objects. This information is captured as a permanent part of the OpenWorks® interpretation data record. Here are some of the many ways Notes can be used:

  - As captured "To-Do" lists for completing the interpretation.

  - As "Why" notes that document the interpreter's reasoning at a key decision point.

  - As "Knowledge-Capture" notes that provide quick and easy access to published articles or previous interpretations.

  These features combine for a significantly enhanced interpretation experience and provide opportunities for increased productivity and improved quality.

- **Interpretation Sets.** Effective data management is one of the more challenging tasks for today's interpreter. A multitude of different data types as well as different versions of data can collectively contribute to a specific decision. This combination of data can vary from the set of input horizons, picks, velocity model, and fault polygons that contribute to a particular surface grid construction to the appropriate set of horizons, faults, velocity model, and seismic that

Go To "What's in this Release?"

represent the properly versioned 85 percent confidence/risk prospect interpretation. Interpretation Sets allow the interpreter to create logical groupings of projects information, organized and named in hierarchical folders. These groupings, or mini-projects, can be easily and quickly recalled for scenario/version/risk-confidence workflows and operations.

- **GeoProbe 2D Line Probes.** With support for 2D seismic interpretation in GeoProbe, the tight GeoProbe > PowerView integration which syncs up a GeoProbe probe face to a PowerView Section is extended to include 2D seismic data.

RAVE™ Software Application

- **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.

- **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®.

- **Data Storage**. For R5000, RAVE tables are stored in the master project directory pointed to by the owdir.dat file. Interpretation Projects retrieve and restore RAVE tables from that location. It is recommended that most interpretation work be performed at the Interpretation Project level and not in the master project. Note that RAVE tables not located in the OW_PROJ_DATA area can also be loaded from the file system using the file browser.

- **Simplified and Optimized Project Administration**. This change eliminates the need for seismic projects in SeisWorks. Master and working projects have been integrated into the new OpenWorks® structure.

- **Identification of Horizons**. They are identified by name, version, interpreter, and attribute.

- **Datum Behavior**. Modifications in datum behavior make it work in conjunction with the automatic datuming of seismic data provided by the OpenWorks® project optimization in Release 5000.0.0. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to the 3D survey and the 2D line seismic data. They work together to provide dynamic shifting of the seismic data to the datum of the IP.

- **Depth Domain Seismic.** Improved handling of depth domain seismic data is available with the ability to assign proper attributes at the Seismic Data Import stage. New depth domain specific attributes are available.

Go To "What's in this Release?"

- **Seismic Data Import.** The subset of data imported, often a narrow vertical range, is now defined based on units relevant to the domain. With depth domain seismic, your window is now defined by depth values. Furthermore, the depth window specification honors session units as set by the OpenWorks® Project Status Tool

- **Session Units.** RAVE now operates in the spatial units defined by Measurement System per the OpenWorks® Project Status Tool. ***Note:*** RAVE sessions save the data, unitless, so reading an old session back with different system units will not cause a re-scale; the numbers will come back in the units in which they were originally created.

Seismic Processing Software Applications: Overall Enhancements in ProMAX®, ProMAX DepthCharge™, and SeisSpace®

- **Single Installation.** SeisSpace, ProMAX and DepthCharge are combined into a single installation, but. the ProMAX tutorials continue to be delivered separately. Because of the switch to LSM/ESD (Landmark Software Manager/Electronic Software distribution), the tutorials are being delivered as a single "protar" archive file that contains all of the areas and lines for all of the tutorials. You will need to run the SeisSpace Restore to install the example flows from the archive file.

- **3D Tools Running in Parallel 3D Processing Architecture**. These include a distributed memory parallel inline sort tool.

- **New 3D Viewer**. It provides QC displays of poststack and 3D pre-stack volumes and includes some picking capabilities.

- **New Archive and Restore Functionality**. Integrated into the SeisSpace Navigator/Flow Builder, it properly handles ProMAX and JavaSeis datasets in complex secondary storage environments.

- **Pre-Stack Data Publication to OpenWorks®**. This feature supports Pre-stack interpretation workflows with Well Seismic Fusion. It is combined with a new set of processes for general input/output from the new OpenWorks® model for poststack seismic and interpretation horizons for 3D and 2D projects.

- **2D SRME (Surface Related Multiple Estimation)**. The new Surface Related Multiple Estimation workflow includes programs for regularization/deregularization, the estimation of multiples, and adaptive subtraction for multiple removal on 2D prestack data.

—ProMAX

These seismic application upgrades are for ProMAX alone:

- **Licensing Changes.** Besides product consolidation (MVA and DepthCharge), you will notice that your R5000 license files no longer have unlimited exec features. There is now a matching count of exec and UI instances. This change is managed by the FlexLM Dup Grp U

configuration that allows a user to continue to access multiple exec instances.

- **Automatic randomization** of the secondary storage list on a "per DDO" basis.

—ProMAX DepthCharge

The upgrades include:

- **Combined delivery** with the main software installation.
- **Software rebuilt** for R5000.0.0 OS and Java versions.

—SeisSpace

Upgrades for SeisSpace include:

- **Sitemanager**. There is no longer a requirement to run a centralized sitemanager, but we feel that most installations will continue to use the system in this manner.

  An option to use a a sitemanager is embedded in the Navigator for single user use. This mimics the behavior of the original ProMAX system where you would load the application, configure it for your environment, launch the flow builder, and start working. *Note*: There is a second client start-up script example in the PROWESS_HOME/etc directory as an example of how to set up for this environment.

  You can still run a root-owned centralized sitemanager for the multi-user case. The centralized sitemanager has been made more robust and fault tolerant. (For instance, navigators will reconnect if the sitemanager dies or is restarted.)

- **Help Files**. PDF files for help are available once again. You can configure the help script to use any PDF file viewer, including applications such as acroread, xpdf, or kpdf.
- **Support for Multi-Subflow Flows**.You can now build multi-subflow hybrid or pure SeisSpace module flows.
- **5D JavaSeis frameworks** are supported.
- **Change in the Meta Data Files for a JavaSeis Dataset in Primary Storage**. The meta data storage for primary only and secondary only JavaSeis datasets has been synchronized to have the same basic files associated with the two different types of datasets. In 2003.19.x.x the two datasets had different meta-data files with different information in them, which made it impossible to restore a dataset to a secondary-only environment when it had originated in primary only. Today, original-format JavaSeis datasets in primary are still acceptable, but if they are archived, they must be returned to primary storage (which will occur automatically).
- **Enhanced Processing History for JavaSeis and ProMAX Datasets**. Processing history propagation between JavaSeis and ProMAX datasets has been improved so that the history is no longer lost as you change back and forth between using ProMAX DDO and SS JDO to write the datasets.

Go To "What's in this Release?"

When a ProMAX dataset is written from a hybrid flow, the history is now stored in the history.xml file and not in the IND file. (For conventional pure ProMAX flows, the history is in the CIND file as before.) History is not propagated if you write a ProMAX dataset in a hybrid flow and then perform a pure ProMAX DDI - process - DDO. The History propagation via ProMAX DDI is enabled only if the history is in the CIND file of the input dataset.

- **Arbitrary Input Select Lists in JavaSeis Data Input.** The ability to use more complex selection lists for Hypercubes, Volumes and Frames has been improved in JavaSeis Data Input.
- **Better Management of User-Defined Headers**. User-defined headers are now stored in a file at the Line level. These headers can be selected from the standard header selector and are annotated as user headers vs. standard system headers. You can also interrogate the headers and data contest anywhere in a flow using two of the icons on the icon bar.
- **Integrated Archive/Restore,** including the handling of sparse JavaSeis datasets, is available.
- **General improvements** have been made in the Intelligent Parameterization in the flow builder.
- **3D Visualization** is available.
- **Parallel Write to a Database Attribute (Limited Functionality)**. The Header to Database tool can be used to write values to the ProMAX OPF databases from a multi-joblet parallel hybrid or SeisSpace flow.
- **PreStack Data Publication to OpenWorks®** supports Fusion workflows.
- **Updated Input/Output Capabilities** for OpenWorks® seismic and horizon files.
- **3D Geophysical Tools** - 3D FKK - 3D FXY decon - 3D Radon - 3D mix.
- **SNAP Workflow (Signal to Noise Adaptive Processing)**. This workflow combines the use of conventional tools or 3D tools to remove selected noise and then use that data as a model for selected amplitude replacement on the input data.
- **2D Geophysical Tools** - SRME workflow.
- **Parallel Sort**. A new inline parallel sort tool utilizes the JavaSeis parallel distributed memory model combined with multiple read iterations. The tool helps you sort problems on very large data volumes. You can output the data in a new 4D JavaSeis Framework. (3D and 5D sorts are not available in this release.)
- **Use of the JavaSeis Framework to Store Large Velocity Tables**. In some cases, you may choose to store VEL, VID or VID tables as JavaSeis framework files. This is targeted for cases where you have gridded velocity information that is very dense (values at every CDP).
- **Frame Utilities.** This series of utility functions helps you with tasks involving the manipulation of individual frames (or ensembles). These may include resetting SEQNO, sorting the traces within the frame, or passing a subset of the traces in the frame down the flow.

Go To "What's in this Release?"

SeisWorks® Software Application

- **OpenWorks® Project Optimization.** The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data, major enhancements to the Interpretation ID Model, the addition of metadata and Processing History Model, redesigned Data Managers, and OpenWorks® and Engineer's Data Model (EDM) rationalization.

- **Horizons and 2D Lines.** There are no more limits on the number you can use.

- **Processing History.** You will be able to access this information for horizons and seismic. The enhancement eliminates the need for elaborate naming conventions.

- **Identification of Horizons.** They are identified by name, version, interpreter, and attribute.

- **Additional Meta Data.** This information is available for horizons, seismic, and faults.

Sierra™/DepthTeam Interpreter™/DepthTeam Explorer™ Software Applications

- **Support for Release 5000.0.0 Platforms and OpenWorks® Project Optimization**. This release of Sierra supports the new platforms for Release 5000.0.0 and the new OpenWorks® Project Optimization data model. In addition, this release includes corrections for several defects.

SigmaView® Software Application

- **Support for Release 5000.0.0 Platforms and OpenWorks® Project Optimization**. This release of SigmaView supports the new platforms for Release 5000.0.0 and the new OpenWorks® Project Optimization data model. In addition, this release includes corrections for several defects.

SpecDecomp® Software Application

- **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to theOpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's DataModel (EDM) rationalization.

- **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic

Go To "What's in this Release?"

data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®

- **Simplified and Optimized Project Administration**. This change eliminates the need for seismic projects in SeisWorks. Master and working projects have been integrated into the new OpenWorks® structure.
- **Identification of Seismic**. Seismic data is now cataloged in OpenWorks® and identified by name and version name.
- **Identification of Horizons**. Horizon data is now cataloged in OpenWorks® and identified by name, version name, interpreter, and attribute.
- **Datum Behavior.** Seismic and Horizon data are automatically datum shifted to the datum of the Interpretation Project. The automatic datuming of seismic data is provided by the OpenWorks® project optimization in Release 5000.0.0. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to the 3D survey and the 2D line seismic data. They work together to provide dynamic shifting of the seismic data to the datum of the IP. The datuming or start time modification of the seismic data is being performed on the OpenWorks® side and is external to the SpecDecomp application.

StratWorks® Software Application

- **OpenWorks® Project Optimization.** The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.
- **Surface Mapping Enhancements.** StratWorks was enhanced to include dip and azimuth calculations with pick data and to grid dip data to use in surface mapping. The purpose of this enhancement is to calculate dip information to include with pick data in the PICK table. Dip meter table data is averaged to calculate values.
- **Recumbent Well Support.** This option is available in Correlation and Single Well View.
- **Line of Section (LOS) and Cross Section Enhancements.** These include the ability to

  —extend an existing LOS
  —automatically track the LOS to a deviated well path
  —post the same well more than once so that full loops can be displayed in Cross Section
  —automatically delete all associated data when deleting an LOS
  —reverse the direction of the display scale along the LOS in Cross Section

Go To “What’s in this Release?”

SynTool™ Software Application

- **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.

- **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®.

- **Simplified and Optimized Project Administration**. This change eliminates the need for seismic projects in SeisWorks. Master and working projects have been integrated into the new OpenWorks® structure.

- **Identification of Horizons**. They are identified by name, version, interpreter, and attribute.

- **Datum Behavior.** Modifications in datum behavior make it work in conjunction with the automatic datuming of seismic data provided by the OpenWorks® project optimization in Release 5000.0.0. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to the 3D survey and the 2D line seismic data. They work together to provide dynamic shifting of the seismic data to the datum of the IP. Because the datuming or start time modification of the seismic data is being performed on the OpenWorks® side and is external to the SynTool application, SynTool now includes some minor changes concerning the initial Time datum setting and the updating of the datum when seismic data is selected for display.

  In previous releases, the initial SynTool Time datum would be set by selecting a SeisWorks project. You could then modify the datum value before completing the initialization of the SynTool session. For Release 5000.0.0, the initial time datum will be set to the datum of the Interpretation Project that you are using. This change is required to maintain integration with SeisWorks, which also uses the IP datum when initializing. Because the seismic data is tied to this datum, you will not be able to modify the datum during initialization. You can, however, modify the datum setting once the session has initialized by using Datum Info.

  Another change revolves around the selection of seismic for display. In the previous release of SynTool, if the selected seismic data was from a different SeisWorks project at a different datum from the SynTool session, the SynTool session would change the current datum to this datum and use its internal method for calculating the correctional velocity for setting the datum shifted time scale. In Release 5000.0.0, because the seismic data is being dynamically shifted to the Interpretation Project datum using the correctional velocity in the IP, this option is no longer required. To maintain consistency with SeisWorks, use or modify the

Go To "What's in this Release?"

settings in the Interpretation Project if the initial datum needs to be set to a different value. If the datum of the seismic data needs to be changed, do so in the 3D Survey or 2D Line setting in Seismic Data Manager, before you launch SynTool.

TDQ™ Software Application

- **5000.0.1 Update to the 5000.0.0 Release.**This update includes:
  - **Processing History.** In previous releases of TDQ™ software, processing history for the converted data was not stored. TDQ™ software now stores a text listing of the input and input velocity model under the Processing History Details as well as a graphical listing of the input dataset and velocity model under the Processing History Graph tab. This information is now stored for both 3D and 2D and can be accessed through **OpenWorks → Data → Seismic Data Manager** and Information Data Manager.
  - **Improved Selection of Inputs.** Added the ability to select input datasets through the following options:
    - MB1 – single selection
    - MB1 Drag multiple selection
    - Ctrl MB1 – individual selection of multiple inputs
    - Shift MB1 - block selection between single MB1 and Shift MB1
  - **DISKOS V98.1 Format ASCII File Import Added.** In addition to the standard TDQ™ .avf format for ASCII file import of velocity files, the user can now import DISKOS formatted velocity files.
  - **Seismic Dataset Velocity Trace Import Added**. The user can now import OpenWorks® seismic datasets as velocity traces to create a TDQ™ velocity model.
- **5000.0.0 Release**
  - **OpenWorks® Project Optimization**. The 5000.0.0 release supports OpenWorks® Project Optimization, which enhances the data model to support new workflows, reduce cycle time, and fully migrate all seismic project data into the OpenWorks® project framework. Integration is built into the Data Model, not the application. Highlights include enhancements to the OpenWorks® Data Model to enable the storage and management of seismic and associated data; major enhancements to the Interpretation ID Model; the addition of the metadata and the Processing History Model; redesigned Data Managers; and OpenWorks® and Engineer's Data Model (EDM) rationalization.
  - **Tighter integration with OpenWorks®**. This release dramatically improves the way that seismic and associated data are managed and stored. SeisWorks projects have been eliminated, and OpenWorks® is extended to manage seismic and other project data. Seismic data and 3D horizon data are stored externally but catalogued and managed through OpenWorks®. 2D horizon data is stored within OpenWorks®.
  - **Sharing of Models**. TDQ and DepthTeam Express models are stored in the master project and not the Interpretation Project, so the model can be shared. When creating a new DepthTeam Express model the user will see the Seismic Survey instead of a list of Seis-

Go To "What's in this Release?"

Works Projects. Because DepthTeam Express models are stored as OW external data a separate upgrade will be needed to use older models in R5000.

— **Simplified and Optimized Project Administration**. This change eliminates the need for seismic projects in SeisWorks. Master and working projects have been integrated into the new OpenWorks® structure.

— **Identification of Horizons**. They are identified by name, version, interpreter, and attribute.

— **Datum Behavior**. Modifications in datum behavior make it work in conjunction with the automatic datuming of seismic data provided by the OpenWorks® project optimization in Release 5000.0.0. OpenWorks® stores both a datum and correctional velocity tied to the Interpretation Project (IP) and a datum tied to the 3D survey and the 2D line seismic data. They work together to provide dynamic shifting of the seismic data to the datum of the IP. Because the datuming or start time modification of the seismic data is being performed on the OpenWorks® side and is external to the TDQ application, TDQ now includes some minor changes concerning the initial Time datum setting and the updating of the datum when seismic data is selected for display. In previous releases, the initial TDQ Time datum would be set by selecting a SeisWorks project. You could then modify the datum value before completing the initialization of a TDQ model. For Release 5000.0.0, the initial time datum will be set to the datum of the Interpretation Project that you are using. This change is required to maintain integration with SeisWorks, which also uses the IP datum when initializing. Because the seismic data is tied to this datum, you will not be able to modify the datum during initialization. You can, however, modify the datum when creating a new model.

Well Seismic Fusion™ Software Application

- **OpenWorks® 5000.0.0 Port.** For Release 5000.0.0, the OpenWorks® data model has been streamlined to reduce data duplication. Now, you can view subsets—called interpretation projects—of a project database; the data in the interpretation project is shared dynamically by reference.

- **Pre-stack Seismic Data Management via OpenWorks®.** To make pre-stack seismic data accessible to any interpreter at any time, Well Seismic Fusion now catalogs the pre-stack data in OpenWorks®. The catalog contains basic survey geometry, parent/child relationships, and a pointer to where the pre-stack actually exists on disk.

- **Offset Synthetics and VSP Data Managed via OpenWorks®.** Well Seismic Fusion now stores 2D offset-synthetics and offset-VSP data directly in OpenWorks®. This change allows any interpreter to access these data types at any time.

- **Working with Multiple 2D Lines; 3D Surveys; and Interpretation Projects.** Well Seismic Fusion can now manage any number of 2D lines or 3D surveys within any number of interpretation projects in a single session.

- **"Basic" and "Full" Licensing of Well Seismic Fusion.** A less-expensive "Basic" License is

Go To “What’s in this Release?”

now available for users who just want to view and crossplot pre-stack data. The “Full License” allows for much more in-depth AVO analysis on all data types.

Z-MAP Plus™ Software Application

- **Z-MAP Plus Workflow**. It will be included in the 5000.0.1 release.
- **Contouring Enhancements.** These include the following additional contour line labeling parameters:
  - All Labeled Except Every nth Line
  - Distance Between Labels
  - Distance from Beginning to First Label
  - Label Value Multiplier
  - Add/Subtract to label value

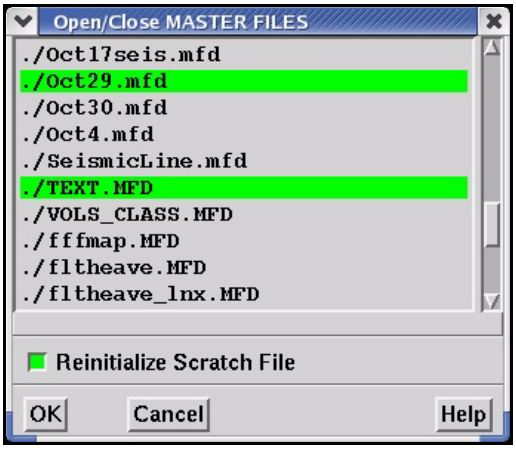
  The following additional contour line parameters are also included in the contouring enhancements:
  - Bold Line Width
  - All Bold Except Every nth Line
  - Hachure Length
  - Distance between Hachures
  - All Hachured Except Every nth Line
  - Hachures Point Updip (places hachures in an outward direction)
  - Dash Length
  - Gap Length (length of gap between two dashes)
  - All Dashed Except Every nth Line
- **File Manager Enhancements.** These have been made:
  - The time is added to the date column (now Date & Time) so that MFD, OpenWorks®, and System files can be correctly sorted by time as well as date. (125658, 157510, 613028)
  - The limit of the number of ZGFs that can be listed has been increased from 1000 to 12000. (139364)

    In the past, if there were more than 999 ZGFs in a directory, File Manager did not list any files. Now if more than 12000, it will list the first 12000 and issue a message that the files after 12000 will not be listed.
  - The number of files (grids, pointsets, etc.) that can be listed has been increased from 1000 to 9999. (726293)

Go To "What's in this Release?"

In the past, File Manager would not come up if there were over 1000 files of the same type.

- **Seismic Horizon Import and Export Enhancements**. These have been included:
  - — Import and Export Horizon data over multiple surveys is available in one pass.
  - — A constant shift mistie correction for 3D data has been added as an option when importing SeisWorks horizons.
  - — Seismic Import takes advantage of the automatic datuming performed by OpenWorks® APIs. Therefore, when importing a DEPTH_STRUCTURE horizon, the data will be relative to sea level. When importing a TIME_STRUCTURE horizon, the data will be relative to the project datum.
  - — If in Time, both the Reference Velocity and the OpenWorks Project Datum have to be set in **Project Admin > Modify** for the automatic datuming to occur.
  - — Seismic Import now honors the OpenWorks® session measurement system. As a result, Z-MAP Plus now exits if the Measurement system is changed.
  - — For Seismic Import, the domain is now automatically picked up from the attribute of the horizon. If the horizon has an attribute of DEPTH_STRUCTURE, the Z-Values will automatically be flipped so the Z-Values will be in TVDSS.
- **Text Posting Enhancement.** In previous releases, Z-MAP Plus text posting (**Features->Text**) did not have an option to omit text if it extended outside the map border. A parameter (**Clip to border mode**) has been added to allow the user to turn text clipping on or off. (Defect 60657)
- **Open/Close MFD Enhancement.** Whenever an MFD was attached or detached, the SCRATCH MFD (also known as the Scratch File) would reinitialize and all the files in the SCRATCH MFD would automatically be deleted. In R5000.0.0, the user has control over when the SCRATCH MFD is reinitialized. In the Open/Close MASTER FILES window (**File > Open > MFD Open/Close**), there is a toggle to reinitialize the Scratch File. Files in the SCRATCH MFD will only be deleted if the user toggles on the **Reinitialize Scratch File** in the Open/Close MASTER FILES window or if Z-MAP Plus is exited. The files in the SCRATCH MFD will no longer be deleted just because an MFD was attached or detached.



Go To "What's in this Release?"

Information Management and Infrastructure

OpenWorks® information is on page **15**.

Advanced Data Transfer (ADT)™ Software Application

- **Simplified migration** of custom datamodel configurations between same-version Advanced Data Transfer™ software installations.
- **Long (fully-qualified) and short names** are supported when defining Corporate Data Store™, OpenWorks®, and PowerHub™ software monikers.
- **Workflow portability**. Files that define user workflows are now portable between machines and platforms.
- **New XSLT utilities** simplify obtaining a property from an Out-Of-Hierarchy (OOH) record.
- **Most XSL translations** now support XML Schema validation of both XML input and XML output.
- **Carto Conversion Support**. It has been added for file-based OpenWorks® target workflows. The example **MMS > OpenWorks** workflow illustrates the functionality.

AssetJournal™ Software Application

- **Support for All Release 5000.0.0 Platforms.** AssetJournal is supported on the following Release 5000.0.0 platform standards: Windows XP & 2003 Server - 32 & 64 bit; RedHat ES Linux 5.0 – 64 bit; and Solaris 10 – 64 bit
- **Improved Performance.** The entire application and all associated components have been rebuilt and are bundled with the latest version of Java. These enhancements, coupled with some internal changes, make overall performance faster.
- **Project Storage Optimized.** Support for jpg output has been added as a project parameter. This enhancement can drastically reduce the disk usage per project. The original images are retained, however, so it is possible to switch back without any loss of image quality.
- **OpenJournal Functionality.** There is an ongoing effort to reproduce functionality from OpenJournal in AssetJournal. These enhancements include the introduction of project options, installation settings, TOC and HOME page settings, workflow changes, and more.

AssetView™ Software Application

- **Support for Release 5000.0.0 OpenWorks Data Model.** AssetView now supports the new OpenWorks® and SeisWorks data model changes, which enable easier access to horizon data, 2D and 3D seismic data, and metadata.

Go To "What's in this Release?"

- **Wellbore Analyzer Integrated with AssetView**. Wellbore Analyzer is an AssetView tool that extracts the intersections of geobodies with wellbores and well plans. It displays these intersections as lathes for seismic volumes, 3D grids, and as intercepts for horizons and surface grids in the 3D view and/or in a table view. For Release 5000.0.0, this tool is integrated with AssetView and does not require a separate license. Thus, you receive greater functionality in AssetView itself.

- **Interpreters and Log Curve Names.** The 5000.0.0 release allows an interpreter different from the one that created a log curve to save the log curve with the same name. If the Auto-Increment Version Number option is selected, AssetView saves the log curve with a new version number. If this option is not selected, AssetView overwrites the previous log curve record and updates it with the latest version for the well ID, curve name, and run number.

- **DecisionSpace Desktop**. AssetView 5000.0.0 launches in the DecisionSpace Desktop. DecisionSpace Desktop provides a configurable launcher that can start Landmark's DecisionSpace and classic applications, and external applications, even if they do not appear in the common tab-view-enabled frame. As a result, it provides you a seamless viewing experience. DecisionSpace applications that choose to launch in the Desktop display their initial interface as a tabbed view in the DecisionSpace Desktop.

- **Geometry in Memory**. By default, every time the rendering object for a 3D grid is created in AssetView, the geometry for that object is loaded from the system, used, then unloaded. Reloading can take time for some file formats, such as for example Rescue, or very large grids. Selecting this checkbox now allows the geometry of an object to be kept in memory allowing faster reloading of grids. This is a Reservoir Model enhancement.

- **Cache Threshold**. When the rendering object of a 3D grid is created, the geometry of the grid is loaded simultaneously into memory, as long as the total number of grid cells is less than the cache threshold size. This functionality results in the fastest possible object creation. When the grid cell count exceeds the cache threshold value, the geometry is grouped into layers and loaded into memory one group at a time. This functionality allows for loading of large grids but slows down object creation time. Selecting this checkbox now allows you to adjust the cache threshold value according to your machine configuration. This is a Reservoir Model enhancement.

Corporate Data Store™ Software Application

Most of the new functionality for CDS 5000.0.0 consists of updating to the Release 5000.0.0 platform and the 5000.0.x version of OpenWorks®. Many data model extensions have been added for this release. Please see the Corporate Data Store Release Notes for a complete list of changes.

- **Pool Partition Replaced**. A new data model named Reservoir partition replaced the Pool partition. There is a new folder for Reservoir data in the CDS task list.

- **Well Test Partition.** Many new attributes have been added to the Well Test partition.

Go To "What's in this Release?"

- **Reference Values.** CDS now prevents users from deleting reference values that are still being used in the database.
- **Oracle Restrictions.** When changing to Oracle 10g, some new restrictions have been added to user names and passwords. These are
  - maximum number of characters is 30
  - must begin with an alphabet character
  - valid characters are A-Z , a-z , 0-9 , $, _ , #
  - Oracle reserved words cannot be used
- The horizon_header task has been removed. This information has been merged into the ref_horizon task.

DecisionSpace® Infrastructure

The DecisionSpace Desktop and DecisionSpace Launcher are the new components that have been introduced in the 5000.0.0 release.

DecisionSpace® Desktop

The Decision Desktop is a common user interface that allows you to access all applications in your workflow. The single interface provides a seamless viewing experience and unifies common components and functionality across the DecisionSpace application suite into one tightly integrated DecisionSpace environment.

The Desktop is a new paradigm for DecisionSpace and has replaced the Session Manager as the first visible user interface. Session parameters are now configured in the Desktop, and once configured these parameters remain in effect across sessions. You no longer need to configure session parameters for each session unless required.

The Desktop provides a launcher that can be configured to start Landmark and other vendors' applications right in the Desktop. The Launcher can also import existing OpenWorks Command Menu configuration files for quick configuration. With the new DecisionSpace Desktop, all Landmark and other vendors' applications needed in your workflow are only a click away.

The DecisionSpace Desktop runs on Windows 32-bit and Red Hat Enterprise Linux 64-bit systems.

DecisionSpace® Launcher

If you do not have any DecisionSpace applications installed on your system, you can use the DecisionSpace Launcher to start other Landmark and vendors' applications on a Red Hat Enterprise Linux 64-bit system. It is a minimal deployment of the DecisionSpace application that uses the applications launching capability of the DecisionSpace Desktop.

Go To "What's in this Release?"

You can use the DecisionSpace Launcher as a common application launch point rather than command line launch of applications from a terminal window. The launcher can also import existing OpenWorks Command Menu configuration files for quick configuration.

The DecisionSpace Launcher can be downloaded as a stand-alone product from the Landmark Software Manager (LSM).

Engineer's Data Model (EDM)™ Software Application

- **Improved Coordinate Transformations.** This enhancement is available through support for Blue Marble 6.2.
- **EDM to OpenWorks® Link Utility.** It uses the OpenWorks® 5000.0.0 Development Kit to map data in the OpenWorks® data model. The installed OpenWorks® client is a prerequisite.

PetroBank Master Data Store™ Software Application

- **Comprehensive Platform Update, Including Linux Support, and Major Updates for Uniface and Recall.**The MDS Server in PetroBank Master Data Store 5000.0.0 has now been migrated from AIX to Enterprise Linux 4.4. This will not only help in improving the performance of the application but also make the PetroBank Master Data Store solution more cost-effective. The MDS Server provides functionality for loading, managing and unloading all types of E&P data. However, for unloading field and pre-stack data loaded on tape, users will use the MDS AIX Unload Server. In addition, PetroBank Master Data Store now uses Uniface 8.4.04 and enables users to access the MDS Server functionality through a Windows based front-end (i.e. PetroBank Master Data Store Windows Client). The version for RECALL has also been upgraded from RECALL 4.3 to 5.2.
- **Support for New Web GUI (PetroBank Explorer), Including Searching.** This new user interface is aimed at the broadest possible range of potential users, and designed to make accessing PetroBank Master Data Store data as simple as possible. A key feature of PetroBank Explorer will be its ability to act as a search-engine for data, including results from information held within PetroBank Master Data Store archive object documents.
- **Coordinated System Enhancements that Extend EPSG Compliance and Fully Support NADCON Conversions.** PetroBank Master Data Store 5000.0.0 extends the EPSG compliance, introduced in its 2003.20.0 release, by letting you

  —add EPSG projected coordinate reference systems into PetroBank Master Data Store through MDS Connect.

  —add multiple datum transformations for the same combination of source and destination datum, uniquely identified using EPSG codes.

  —define the specific datum transformation to be used when converting a given set of coordinates into WGS84.

Go To “What’s in this Release?”

In addition, an EPSG code has been associated with well-depth reference for elevation references data along with support for two new transformation methods, NADCON and NTv2 in PetroBank Master Data Store. You can use these transformation methods to perform a datum shift for navigation data loaded using NAD27 to NAD83 or vice versa. The NADCON transformation method can also be used to perform a datum shift for navigation data loaded using NAD27 or NAD83, and convert to WGS84 if desired.

- **Extension of Web Ordering Services to Include Individual Seismic Sections and Navigation Data.** The ordering service is one of a number of web services in MDS. This change will increase the range of data types that can be accessed.

- **Replacement of the Old "Exman" Loading Utility.** The EXSCI – Data Management utility, which was previously used to load UKOOA format files, has now been eliminated from PetroBank Master Data Store 5000.0.0. This utility has been replaced by an enhanced Import Navigation functionality. Enhancements in the Import Navigation functionality include:

  —Application of processes such as interpolation, decimation, set back and segmentation to control geometry data (either in SPS or UKOOA format) being loaded into PetroBank Master Data Store.

  —Support for UKOOA P1/76 format.

  —Loading and unloading of geometry data in SPS format on disk.

- **Access to a Wider Range of Client Administrative Functions from PowerExplorer.** A large number of MDS Uniface client functionalities have been ported to MDS Connect 5000.0.0. These options will enable MDS Connect users to:

  —Maintain company information using new tasks introduced under the PetroBank Master Data Store > Company task tree.

  —Load production data in PetroBank Master Data Store. Production data can only be loaded into PetroBank Master Data Store by users with the roles PDO, CDM or GOV.

  —Generate production reports for production data loaded in PetroBank Master Data Store.

  —View trade information using new tasks under the PetroBank Master Data Store > Trade task tree.

PowerExplorer® Software Application

- **ASCII Macro Files.** The ASCII (xml) alternative offered in Release 5000.0.0 eliminates the following problems with PowerExplorer’s session save/restore mechanism: Sessions cannot be shared across dictionaries, they cannot be edited, and they are not accumulative. The ASCII (xml) alternative also provides a basis for future workflow automations (macros).

Go To "What's in this Release?"

- **Better GUI for Case-Sensitive Queries.** The cryptic operator names used in PE2003.20.0 have been replaced with a simple toggle in the task details area.

- **GISView Coordinate System Handling.** You now have better control over the coordinate systems. You will also see improved datum transformations when reading local shapefiles.

- **Usability.** These improvements include multi-column selection in the TaskBuilder GUI; a filtering mechanism in the data source selection dialog box; more and better pick lists and drilldowns in various OpenWorks® tasks; and a progress indicator for TableView create/update/delete (CUD).

- **WellLogView Marker Support.** Various mechanisms now make it possible for you to overlay log curves with marker information, such as picks.

- **New Metadata Functions.** PowerExplorer/PowerHub provides a mechanism that allows topic attributes to be computed. There are new functions for unit and coordinate system conversions, as well as full access to wellbore path calculations (interpolation of tvd, tvdss, dx, dy, etc based on md). These calculations can be configured to use either OW or CDS poslog data. Creating pure computational tasks is easy when you use the mechanism with the new EchoAccessor. It can also be used in TaskBuilder tasks.

- **Cross Database Comparisons.** PowerExplorer's drilldown mechanism normally expects the drilldowns to be within the same database. In Release 5000.0.0, there is a self-drilldown for all tasks, as well as a new drilldown option that provides more flexibility in the attribute mappings.

PowerHub™ Server

- **AutoConnect Wizard**. It provides full Create, Read, Update, and Delete functionality, enhancing the Read capabilities of Release 2003.20.

- **Queries.** You can now perform queries using Area of Interest (AOI) as a constraint.

Reference Data Manager™ Software Application

Most of the effort for the 5000.0.0 release was concentrated on moving to the 5000.0.0 platform and the new OpenWorks® data model. The following enhancements are included in the release.

- **Reference Topics.** Functionality was added that allows RDM to clean up reference topics that have more than one natural key. The primary topics affected are CDS ref_state_or_province and CDS ref_county.

- **Extensions for Reference Data Types.** RDM reference data types have been extended to work with the new Release 5000.0.0 CDS data types and the Release 5000.0.0 OpenWorks® data types.

Go To "What's in this Release?"

Team Workspace® Software Application

- **User Interface Evolution.** Web application technology has been evolving at a fast pace. New techniques and tools enable the creation of richer end-user experiences. The Team Workspace end-user interface is undergoing an evolution to make use of some of these newer technologies. Changes will result in streamlined interfaces with applications, more intuitive functionality, and the ability to develop much richer applications. The platform for this upgrade is ASP.Net.

- **PetroBank Explorer.** This new feature is a customization of Team Workspace. It provides fast and simple access to data and data-driven workflows based on the PetroBank Master Data Store. One key aspect of this feature is its integration with a search engine. This functionality will provide a path for the future integration of index searching within Team Workspace. This is available when PetroBank Master Data Store 5000.0.0 is released.

- **Data Store Plug-In Framework.** To help Team Workspace sites start up quickly, this module plug-in has been developed. It allows you to create workspaces by using XML templates. These templates will create projects, connections, catalogues, applications, and more. Plug-in XML templates can be shared.

- **Master Data Store Ordering Extension.** The interface with PetroBank Master Data Store currently supports the ordering of three data types: Well log curves, Seismic Projects, and Archive Objects. In Release 5000.0.0, two new types are added: Individual Seismic Sections and Seismic Navigation Data.

- **Project Copy.** Many companies organize their Team Workspace deployments around projects. When a new project starts, they build a consistent Team Workspace Project to maintain this activity. To facilitate this function, a Project Copy feature is being added. This feature will enable duplication of an existing project. A project can be created as a clean Master Project, which can be used as the source project for the copy.

WOW™/CDA/PA Software Application

- **Platform Support.** WOW/CDA/PA supports the new platforms in Release 5000.0.0.

Go To “What’s in this Release?”

Hummingbird Exceed Configuration Instructions

Many Landmark products use Hummingbird Exceed. Release 5000.0.0 uses Hummingbird Exceed 2007. Exceed is a third party purchase and should be installed using the standard installation instructions. This section will define how to configure Exceed for Landmark products.

Exceed 2007 works with 32- or 64-bit applications. Exceed 3D can be used with high-end OpenGL applications.

The Hummingbird Exceed X Server must be tuned manually after it is installed in order for all Landmark applications to function properly. After installing Exceed, perform the following steps to tune the Server:

1. Log in as Administrator.
2. Select **Start > All Programs > Hummingbird Connectivity 2007 > Exceed Tools > Xconfig**.

   The Xconfig control panel opens.
3. In the Xconfig window, click **Screen Definition** in Classic View, or click **Display And Video** in Category view.
4. On the Screen 0 tab, do the following:
   - Select **Use All Monitors**.
   - In Window Mode, select **Multiple**.
   - In the Panning group box, check Panning, select Fast in the Speed dropdown list, and enter 25 in the Amount text box.
   - Deselect **Auto Load XRDB**.
   - In the Server Visual, select **True Color**. However, if the color depth of the computer is less than 24 or 32 bit, select PsuedoColor.
   - In Root Size, enter **0** in Width and Height.

Go To “What’s in this Release?”

- In the Window Manager group box, select Default To Native in the dropdown list box, deselect **Fit Window To Display**, and check **Cascade Windows**.

> **Other settings**
>
> Some dual-monitor video cards may require other settings on the Screen tab. Specifying settings for those cards is beyond the scope of this document.

5. Select the **Common Settings** tab.
6. Deselect the **Close Warning On Exit** box.
7. In the Xconfig window, click **Validate And Apply Changes**.
8. In the Xconfig window, click **Keyboard Input** in Classic View, or click **Mouse, Keyboard, And Other Input Devices** in Category view.
9. In the Keyboard Input tab, select **To X** in the Alt Key dropdown list box.
10. In the Xconfig window, click **Validate And Apply Changes**.
11. In the Xconfig window, click **Performance** in Classic view, or click **Other Server Settings** in Category view.
12. In the Performance tab, do the following:
    - In the Drawing group box, deselect **Draft Mode**. Check the **Exact Zero-Width Lines** and **Batch Requests** boxes.
    - In the Backing Store group box, select **When Mapped** in both the Maximum and Default items. Select **None** in Minimum.
    - In the Advanced group box, check **Save Bits** and **Oversized Cursors** and deselect the other checkboxes.
    - In the Performance tab, click **Tune** to start Xperf.
    - If the Exceed server is running, Xperf displays an Xperf question dialog asking to restart the server and an Xperf dialog.
13. If the Xperf question dialog displays, click **Yes**.
14. Click **Run All** in the Xperf dialog. Xperf runs the tests.

Go To “What’s in this Release?”

A series of graphics will appear in the upper left corner of the monitor, and the Xperf dialog box will become inactive.

15. When the tests are complete, click **OK** in the Xperf dialog.

16. In the Xconfig window, click **Validate And Apply Changes**.

17. In the Xconfig window, click **Protocol** in Classic view, or click **X Server Protocol** in Category view.

18. In the Extensions tab, and its Enable Extensions list box, check GLX (for OpenVision), and deselect XInputExtension.

19. Select GLX to highlight it in the Enabled Extensions list box, not to check or deselect its checkbox.

20. Click the **Configure button** to display the Configure GLX dialog.

21. Check the **Hardware Acceleration** and **One Visual Per Pixel Format** boxes, but deselect the other checkboxes.

22. Direct Rendering and Overlay Support should not be checked. Potentially bad behavior could result if they are enabled.

23. Click **OK** in the Configure GLX dialog box.

24. In the Xconfig window, click **Validate And Apply Changes**.

25. Select **File > Exit** to close the Xconfig control panel.

26. This completes the Hummingbird Exceed X Server configuration process. It is not necessary to reboot the computer.

Go To “What’s in this Release?”

Fonts in Hummingbird Exceed

Hummingbird Exceed can have difficulties dealing with many fonts. If some Landmark applications have problems displaying labels or other text, Exceed may have too many fonts or font servers.

To delete unnecessary fonts or servers, do the following:

1. Log in as Administrator.
2. Select **Start > All Programs > Hummingbird Connectivity 2007 > Exceed Tools > Xconfig**.

   The Xconfig control panel opens.
3. Click **Font** in the Classic view, or click **Font Management** in Category view.
4. In the Font tab, click **Edit**.

   The Font Database dialog box displays.
5. For each unnecessary font:
   - Select a font description in the list box.
   - Click **Delete**.
6. When finished deleting fonts, click **OK** to close the dialog.
7. Click **Validate And Apply Changes** in the Xconfig window.
8. Close the Xconfig window.
9. Restart the Exceed X server.

Go To “What’s in this Release?”

Contacting Landmark Customer Support

Landmark software operates Technical Assistance Centers (TACs) in Australia, the United Kingdom, and the United States. Additional support is also provided through regional support offices around the world.

Support Via Web Portal

Support information is always available on the Landmark Customer Support internet page. You can also submit a support request directly to Landmark Customer Support though the Landmark Customer Support Portal:

http://css.lgc.com/InfoCenter/index?page=home

To request support in the Landmark Customer Support Portal:

1. In the **PIN** and **Password** text boxes in the Please Sign In area, enter your registered personal identification number and password.
2. Click the **Sign In** button.
3. In the Case & Defect Information area, click the **Create A New Case** link.
4. In the **Create Case** area, fill in the necessary information. Provide details about your technical concern, including any error messages, the workflow steps where the problem occurred, and attachments of screen shots that display the problem. To help understand the concern, you can also attach other files too, such as example data files.
5. Click the **Submit** button. A support analyst in the nearest Technical Assistance Center will respond to your request.

Go To "What's in this Release?"

Technical Assistance Centers

Asia, Pacific 8:00 am - 5:00 pm Local Time Monday-Friday, excluding holidays	**61-8-9481-4488 (Perth, Australia)** Toll Free 1-800-448-488 Fax: 61-8-9481-1580 Email: apsupport@lgc.com
Europe, Africa, Middle East 9:00 am - 5:30 pm Local Time Monday - Friday, excluding holidays	**44-1372-868686 (Leatherhead, UK)** Fax: 44-1224-723260 (Aberdeen, UK) Fax: 44-1372-868601 (Leatherhead, UK) Email: support@lgc.com
Latin America (Spanish, Portuguese, English) 7:00 am - 5:00 pm Local Time	**713-839-3405 (Houston, TX, USA)** Fax: 713-839-3646 Email: soporte@lgc.com
North America 7:30 am - 5:30 pm Central Standard Time Monday - Friday, excluding holidays	**713-839-2200 (Houston, TX, USA)** Toll Free 1-877-435-7542 (1-877-HELP-LGC) Fax: 713-839-2168 Email: support@lgc.com

Regional Offices

For contact information for regional offices, see the Contact Support page located at:

http://css.lgc.com/InfoCenter/index?page=contact&section=contact

If problems cannot be resolved at the regional level, an escalation team is called to resolve your incidents quickly.

Helpful Links

Name	Website Address
Landmark Software & Services home page	http://www.halliburton.com/landmark
Landmark Support Portal	http://css.lgc.com/InfoCenter/index?page=home
Oracle home page	http://www.oracle.com
FLEXNet Publisher (Flexera Software, Inc.)	http://www.flexerasoftware.com
Microsoft SQL Server home page	http://www.microsoft.com/sqlserver
Adobe Acrobat Reader	http://www.adobe.com
Microsoft SQL Server Express home page	http://www.microsoft.com/express/sql

Go To “What’s in this Release?”

Halliburton | Landmark Software & Services
2107 CityWest Blvd, Building 2, Houston, Texas 77042-3051, USA
P.O. Box 42806, Houston, Texas 77242, USA
Phone:713-839-2000, FAX: 713-839-2015
Internet: www.halliburton.com/landmark

Go To “What’s in this Release?”

Third Party Licenses and Attributions

Landmark acknowledges that certain third party code has been bundled with, or embedded in, Landmark’s software. The licensors of this third party code, and the terms and conditions of their respective licenses, may be found in the release notes of the appropriate point product.

Disclaimer

The programs and documentation may provide links to external web sites and access to content, products, and services from third parties. Halliburton is not responsible for the availability of, or any content provided on, third party web sites. You bear all risks associated with the use of such content. If you choose to purchase any products or services from a third party, the relationship is directly between you and the third party. Halliburton is not responsible for: (a) the quality of third party products or services; or (b) fulfilling any of the terms of the agreement with the third party, including delivery of products or services and warranty obligations related to purchased products or services. Halliburton is not responsible for any loss or damage of any sort that you may incur from dealing with any third party.