

# ***OpenWells® Software***

## ***Version 5000.1.12.0***

### ***Release Notes***

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## Introduction

This document contains additional information about the OpenWells® software 5000.1.12.0 standalone installation. This software version includes fixes and enhancements of the OpenWells® software that were released in previous versions of the Engineer's Desktop™ (EDT™).

For further information or help, contact Landmark Support.

## Enhancements for Version 5000.1.12

### *Configure Printed Reports Using Microsoft Word*

OpenWells now supports the use of Microsoft Word when editing and printing reports. In the 5000.1.12 release OpenWells come with one pre-configured MS Word report, the **Texas-W2 Completions** report (available from the wellbore node in the Well Explorer).

**RAILROAD COMMISSION OF TEXAS**  
Oil and Gas Division

Tracking No.: \_\_\_\_\_  
Status: \_\_\_\_\_

This facsimile W-2 was generated electronically  
from data submitted to the RRC.

API No. **3301301443**

7. REC District No. \_\_\_\_\_  
8. REC Lease No. \_\_\_\_\_  
9. Well No. **OH**  
10. County at well site **CLEARWATER**

**Oil Well Potential Test, Completion or Recompletion Report, and Log**

1. FIELD NAME (as per REC Records or Wildcat) **SHALE FIELD NO. 1**  
2. LEASE NAME \_\_\_\_\_  
3. OPERATOR'S NAME (Exactly as shown on Form F-5, Organization Report) **Landmark Graphics**  
REC Operator No. **123456**  
4. ADDRESS **107861 Clearwater County**  
5. If Operator has changed within last 60 days, name former operator \_\_\_\_\_

6a. Location (Section, Block, and Survey) \_\_\_\_\_  
6b. Distance and direction to nearest town in this county.  
**From main battery take highway 766 north 4 miles, location is on the right.**

12. If workover or reclass, give former field (with reserve) & Gas ID or oil lease no. \_\_\_\_\_  
GAS ID or OIL LEASE # \_\_\_\_\_  
Oil ID Gas-G \_\_\_\_\_  
Well # \_\_\_\_\_

13. Type of electric or other log run \_\_\_\_\_  
14. Completion or recompletion date \_\_\_\_\_

11. Purpose of filing Initial Potential  
Reclass  
Well record only (Explain in remarks)

### *OpenWells Module for Rushmore Reviews DPR, SPR and CPR Workbooks*

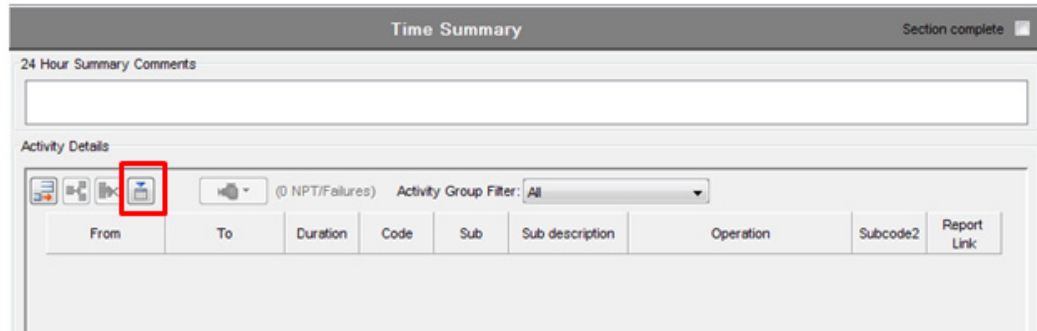
Analysts tasked with preparing workbooks for the Rushmore Reviews Drilling, Shale and Completions submission can now use the **OpenWells Performance Reviews** module to automatically generate workbooks. Using this module automates export of up to 95% of the DPR workbook, over 50% of the SPR workbook and approximately 10% of the CPR workbook.

The **OpenWells Performance Reviews** module is downloaded separately from OpenWells / EDT and is compatible with all supported R5000 versions of EDM.

### *Import Activity from the Pason Electronic Tour Sheet*

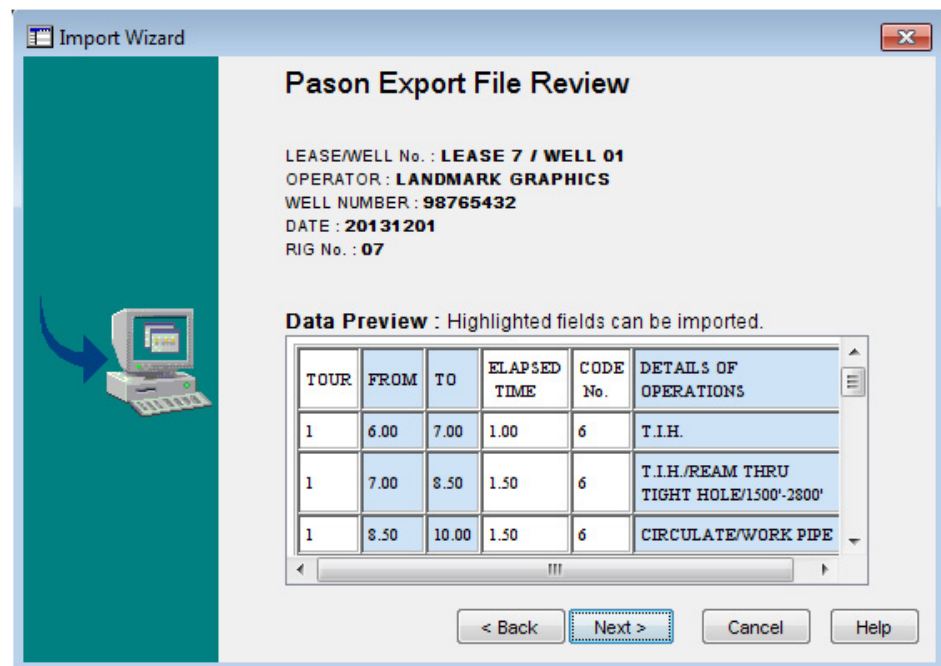
Supervisors can save time and eliminate duplicate entry by importing operations activity from a Pason Electron Tour Sheet.

Selecting the “Import” button on the time summary data entry form provides the option to import a Pason Tour Sheet.



The screenshot shows the 'Time Summary' window. At the top, there's a '24 Hour Summary / Comments' text area. Below it, the 'Activity Details' section contains a toolbar with several icons. The 'Import' icon, which looks like a document with a downward arrow, is highlighted with a red rectangular box. To the right of the toolbar, there's a dropdown menu showing '(0 NPT/Failures)' and an 'Activity Group Filter' set to 'All'. Below the toolbar is a table with columns: From, To, Duration, Code, Sub, Sub description, Operation, Subcode2, and Report Link.

After selecting the Electronic Tour Sheet supervisors are presented with a preview of the available operations and can select which of those activity to import.



The screenshot shows the 'Import Wizard' window titled 'Pason Export File Review'. It displays the following information:

- LEASE/WELL No.: **LEASE 7 / WELL 01**
- OPERATOR: **LANDMARK GRAPHICS**
- WELL NUMBER: **98765432**
- DATE: **20131201**
- RIG No.: **07**

Below this, a 'Data Preview' section states: 'Highlighted fields can be imported.' It contains a table with the following data:

TOUR	FROM	TO	ELAPSED TIME	CODE No.	DETAILS OF OPERATIONS
1	6.00	7.00	1.00	6	T.I.H.
1	7.00	8.50	1.50	6	T.I.H./REAM THRU TIGHT HOLE/1500'-2800'
1	8.50	10.00	1.50	6	CIRCULATE/WORK PIPE

At the bottom of the window, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'. The 'Next >' button is highlighted with a blue border.

### *OpenWells Preconfigured for Shale Operations*

OpenWells now comes preconfigured for typical shale operations.

Typical configurations for Construction, Drilling, Completion, Maintenance, Workover and Surface Equipment/Facilities event types have been assigned to the **“Landmark – Shale Supervisors”** user group, accessible in the Security node of the EDM Administration utility.

Administrators also have a simplified interface for managing group configurations, which has been broken into five tabs:

1. Use the **General** tab to define the group name, security level and tight group associations.

The screenshot displays the 'General' tab of the EDM Administration utility. The interface includes a tabbed menu at the top with 'General', 'Tokens', 'Report Visibility', 'Data Entry Forms', and 'Canvas Assignments'. The 'General' tab is active, showing the following configuration:

- EDM Group Name:** Landmark - Shale Supervisors
- Security Level:** 5
- Tight Groups:** A table with columns 'Member', 'Tight Group Name', and 'Description'. One entry is shown: a checked checkbox in the 'Member' column, 'UNRESTRICTED' in the 'Tight Group Name' column, and 'Unrestricted' in the 'Description' column.
- Users in Group(1):** A list box containing the user 'edmshale'.

2. Use the **Tokens** tab to define actions allowed by users in this group.

The screenshot shows the 'Tokens' configuration window with the following data:

Application Tokens	
Revoke	Token Name
<input type="checkbox"/>	Admin.CarryOver.edit
<input type="checkbox"/>	Admin.DataValidation.edit
<input type="checkbox"/>	Admin.Historian.edit
<input type="checkbox"/>	Admin.JobTypes.edit
<input type="checkbox"/>	Admin.LayoutManager.edit
<input type="checkbox"/>	Admin.Openwire Config.edit
<input type="checkbox"/>	Admin.OutputReports.edit
<input type="checkbox"/>	Admin.OutputReports.Landma
<input type="checkbox"/>	Admin.PreviewPanels.edit
<input type="checkbox"/>	Admin.ReportTypes.edit
<input type="checkbox"/>	Admin.SAM.edit
<input type="checkbox"/>	Admin.Security.edit
<input type="checkbox"/>	Admin.ShortcutBars.edit
<input type="checkbox"/>	Admin.start
<input type="checkbox"/>	Admin.Status Colors.edit
<input type="checkbox"/>	Admin.SystemLookups.edit
<input type="checkbox"/>	Admin.SystemSettings.edit
<input type="checkbox"/>	Admin.SystemSettings.remove
<input type="checkbox"/>	ARIES.admin
<input type="checkbox"/>	ARIES.start

OpenWells Report Tokens	
Revoke	Token Name
<input type="checkbox"/>	Casing.add
<input type="checkbox"/>	Casing.delete
<input type="checkbox"/>	Casing.edit
<input type="checkbox"/>	Casing.lock
<input type="checkbox"/>	Casing.print
<input type="checkbox"/>	Casing.view
<input type="checkbox"/>	Cleanup.add
<input type="checkbox"/>	Cleanup.delete
<input type="checkbox"/>	Cleanup.edit
<input type="checkbox"/>	Cleanup.lock
<input type="checkbox"/>	Cleanup.print
<input type="checkbox"/>	Cleanup.view
<input type="checkbox"/>	Construction.add
<input type="checkbox"/>	Construction.delete
<input type="checkbox"/>	Construction.edit
<input type="checkbox"/>	Construction.lock
<input type="checkbox"/>	Construction.print
<input type="checkbox"/>	Construction.view
<input type="checkbox"/>	Reclamation.add
<input type="checkbox"/>	Reclamation.delete

3. Use the **Report Visibility** Tab to define the types of operations reports an OpenWells user can create when working in a particular type of event.


General Tokens Report Visibility Data Entry Forms Canvas Assignments

Filter By

Event type: ORIG COMPLETION

Reports for Event Type='ORIG COMPLETION'

Visible <input type="checkbox"/>	Report
<input checked="" type="checkbox"/>	Cost Estimate and AFE
<input type="checkbox"/>	Daily Geology
<input checked="" type="checkbox"/>	Daily Operations
<input type="checkbox"/>	Drill Stem Test
<input type="checkbox"/>	Electrical Submersible Pump
<input type="checkbox"/>	Fishing
<input type="checkbox"/>	Fluid Hauling
<input type="checkbox"/>	Gas Lift
<input type="checkbox"/>	General Work
<input type="checkbox"/>	Gravel Pack
<input type="checkbox"/>	Kick
<input type="checkbox"/>	Logging
<input type="checkbox"/>	Material Transfer
<input checked="" type="checkbox"/>	Perforation
<input checked="" type="checkbox"/>	Pipe Tally
<input type="checkbox"/>	Plunger Lift
<input type="checkbox"/>	Pressure Survey
<input type="checkbox"/>	Production Equipment Failures

 Tip - You can select multiple rows and click a single checkbox to change them all

**Note:** This new feature in OpenWells defines the reports a user sees when they select **“Create New Report”**, for example the above configuration results in the following new report dialog in OpenWells:

**Create New Report Wizard**

Select Report Type:

- Cost Estimate and AFE
- Daily Operations
- Perforation
- Pipe Tally
- Stimulation
- Well Planning
- Wellbore Equipment
- Wellhead

Company: [Company]

Project: [SHALE FIELD NO. 1]

Site: [PAD-01 (MULTI)]

Well: [PAD-01-1] Find...

Wellbore: [OH]

Event: [OCM (2/10/2011)]

Completion: [ ]

< Back Next > Cancel Help

4. Use the **Data Entry Forms** tab to define the configuration layouts to be associated with each type of report.



General Tokens Report Visibility Data Entry Forms Canvas Assignments

Filter By

☒ Event type: ORIG COMPLETION

☐ Report type: Casing

Go to Layout Manager

Data Entry Forms for Event Type='ORIG COMPLETION' and Tight Group='<not specifi

Report	Data Entry Form
Cost Estimate and AFE	Landmark - Cost Est. and AFE - Shale
Daily Operations	Landmark - Daily Completion - Shale
Perforation	Landmark - Perforation - Shale
Pipe Tally	Landmark - Completion Tally - Shale
Stimulation	Landmark - Stimulation-Frac - Shale
Well Planning	Landmark - Well Planning - Shale
Wellbore Equipment	Landmark - Wellbore Equipment Co...
Wellhead	Wellhead (Landmark default)

5. Use the **Canvas Assignments** tab to associate event types and canvases when configuring the interactive (Rocket) interface.

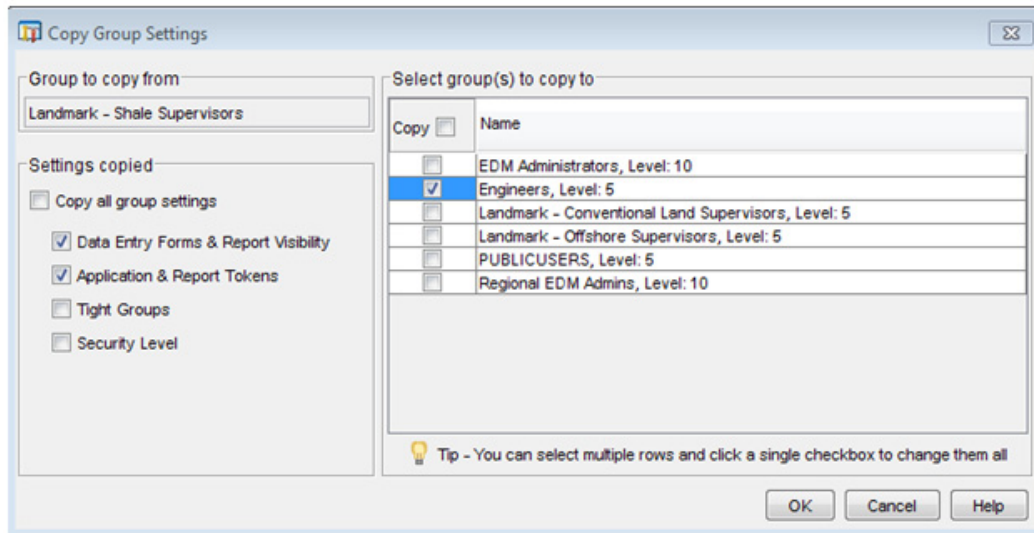
General Tokens Report Visibility Data Entry Forms Canvas Assignments

Well Site Canvas Assignments

Event	Canvas
ABANDONMENT	Landmark Default
CLEAN UP	Landmark Default
CONVERSION	Landmark Default
DIAGNOSTIC	Landmark Default
ENHANCEMENT	Landmark Default
MAINTENANCE	Landmark Default
ORIG COMPLETION	Landmark Default
ORIG CONSTRUCTION	Landmark Default
ORIG DRILLING	Landmark Default
PLUG BACK	Landmark Default
RE ENTER	Landmark Default
REACTIVATE	Landmark Default
RECLAMATION	Landmark Default
RECOMPLETION	Landmark Default
REDESIGN	Landmark Default
REPAIR	Landmark Default
RIGLESS OPERATIONS	Landmark Default
SITE INVESTIGATION	Landmark Default
SURFACE EQUIPMENT	Landmark Default
SURVEY	Landmark Default
SUSPEND	Landmark Default
TEST	Landmark Default
WORKOVER	Landmark Default

Tip - You can select multiple rows and right click to change assignments on all select...

Administrators can use the new **“Copy Group Settings”**, available in the right click menu on a user group node, to apply some or all of the predefined shale configuration to another user group, or to copy settings between any groups.



### *OpenWells Available as a Standalone Install*

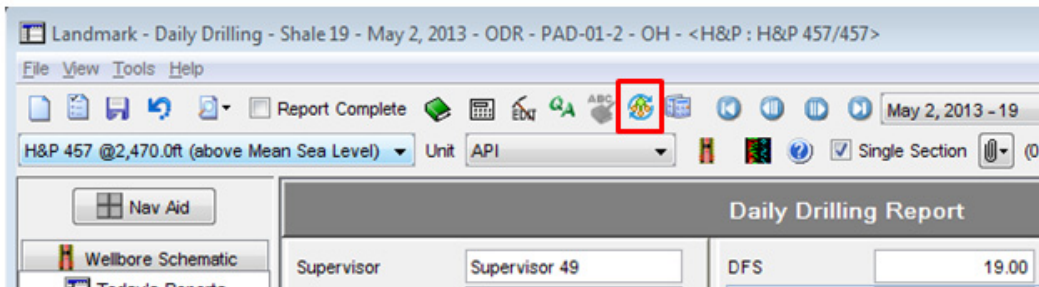
Some deployment scenarios, such as rig site laptops, only require the OpenWells application instead of the full EDT application suite.

In the 5000.1.12 release OpenWells is now available as a standalone installation which saves time and effort during deployment. The standalone installation includes everything required to run OpenWells, is 65% smaller than a full EDT installation and can save 20 minutes per installation.

### *Synchronize a Single Report From OpenWells*

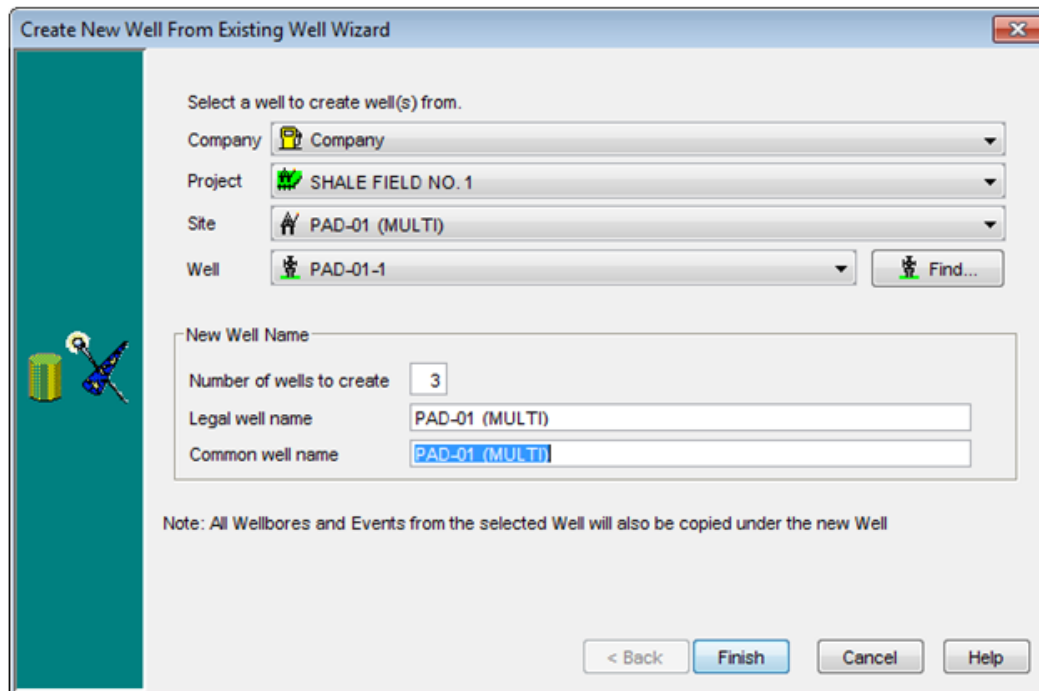
Rig supervisors often have poor field communications and, to save time, wish to transfer only their morning reports and wait until better communications to do a full synchronization which transfers configuration settings in addition to the operations reports.

Using the EDM Autosync button at the top of their operations reports supervisors are now able to send only that report.



### *Quickly Create Well Headers for Batch Operations*

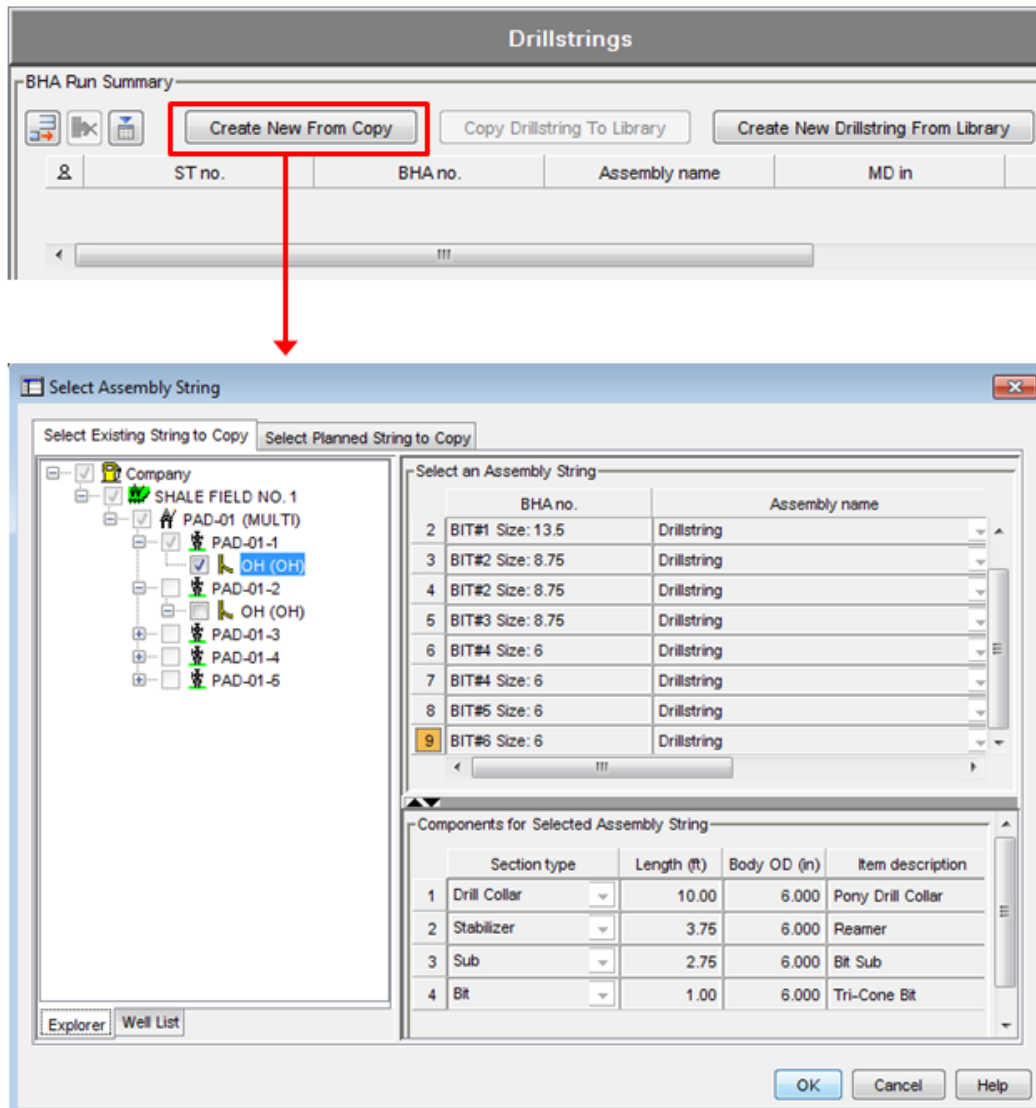
Administrators and field supervisors now have a “New Well From Existing Well” menu option accessible from the site node in the well explorer. Using this wizard users are able to quickly create one or more well headers using another well as a template.



### *Reuse BHA's, Hole Sections and Casings When Entering Batch Operations*

Drilling supervisors often have to enter similar/identical information for each well during a batch drilling operation. Supervisors can now reuse the BHA, Hole Section and Casing configuration between wells as they are constructed during a batch operation.

Supervisors can reuse a BHA run on the previous well by selecting “**Create New From Copy**” in the BHA Run Summary (Drillstrings Section):



Supervisors can reuse Hole Section Details from the previous well by selecting **“Create New From Copy”** in the Hole Sections Spreadsheet:

**Hole Sections**




General

ST no.

Parent wellbore

Kick off date

Hole Sections

   **Create New From Copy**

	ST no.	Event name	Section	MD top (ft)	MD base (ft)	Hole section start date/time	Hole section end date/time
1	OH	ODR, HORIZONT	SURFACE	0.0	2,500.0	12/09/2013 14:51	12/09/2013 14:51

Select Hole Section(s) by highlighting the row

Select a wellbore to copy Hole Section(s) from

Company

- SHALE FIELD NO. 1
  - PAD-01 (MULTI)
    - PAD-01-1
      - OH (OH)**
      - PAD-01-2
      - OH (OH)
      - PAD-01-3
      - PAD-01-4
      - PAD-01-5

Select Hole Section(s) by highlighting the row

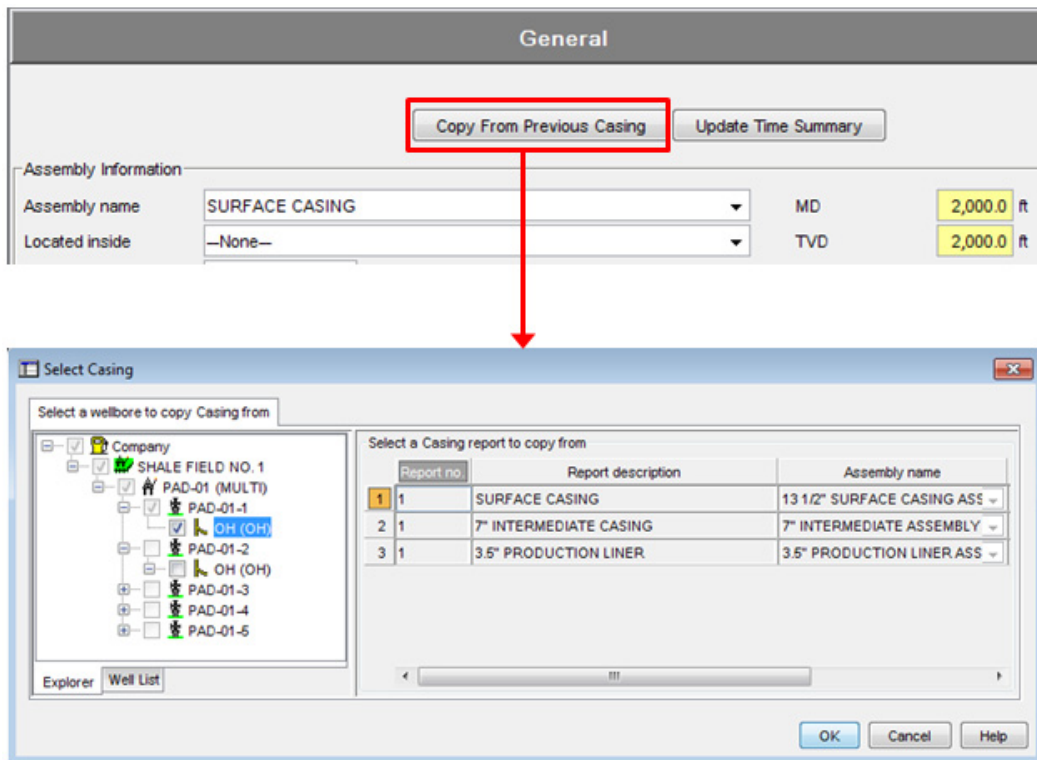
ST no.	Phase	Section	MD top (ft)	MD base (ft)
1	OH	ACTUAL SURFACE	100.0	2,000.0
2	OH	ACTUAL 7 1/2" INTERMEDIATE	2,000.0	10,000.0
3	OH	ACTUAL 3.5" PRODCUTION	10,000.0	20,000.0

Annulus Details for the selected Hole Section

Section type	Effective hole diameter (in)	Depth (ft)	Length (ft)
1 Open Hole	3.500	20,000.0	10,000.00

OK Cancel Help

Supervisors can reuse casing details from the previous well by using the ***“Copy From Previous Casing”*** button in the General Section of the Casing Report:



### ***BHA & BIT Operations Update Automatically From Rotating Hours***

OpenWells now populates the BHA and Bit Operations *drilling hours* with the *rotating hours* recorded in the General Section of the Daily report in scenarios where only one BHA/BIT Operation are recorded per day.

To enable this behavior the system setting AutoPopulateBHA must be set to YES (default behavior is NO).

# System Requirements

## ***Supported Platforms***

- Windows 7 SP1, 64-bit (note that Windows XP is not supported)
- Windows Server 2008 R2 SP1, 64-bit
- Windows Vista 64-bit (Vista 32-bit is not supported)
- Citrix XenApp 6.0
- Citrix XenApp 6.5

## ***Supported Databases***

- Oracle 11.2.0.2 Server, 64-bit (must connect through 32-bit Oracle Client)
- Oracle 11.2.0.2 Client, 32-bit (64-bit Client not supported)
- Oracle 11.2.0.3 Client, 32-bit (64-bit Client not supported)
- Oracle 10.2.0.4 Server, 64-bit (must connect through 32-bit Oracle Client)
- Oracle 10.2.0.4 Client, 32-bit (64-bit Client not supported)
- SQL Server 2008 R2 SP1, 64-bit (must connect through 32-bit SQL Native Client)
- SQL Server Express 2005, SP3, 32-bit

## ***Hardware Requirements***

<b>Recommended for Windows 7 64-bit</b>	<b>Minimum for Windows 7 64-bit</b>
<ul style="list-style-type: none"> <li>• Windows 7 Enterprise, 64-bit SP1</li> <li>• 2 GHz processor (or greater)</li> <li>• 4 GB RAM (or greater)</li> <li>• SVGA color monitor</li> <li>• 106-key Windows-ready integrated keyboard</li> <li>• MS-compatible mouse or pointing device</li> <li>• TCP/IP based network connection 100 Mbps, or</li> <li>• FLEXid dongle (bitlock), FLEXnet Publisher version 11.4 (for licensing)</li> <li>• 3 GB or more disk space</li> <li>• CD-ROM drive (not required if installing from a network location)</li> <li>• parallel port or USB port if dongle/bitlock used</li> <li>• video card with 3-D rendering capability, minimum 128MB video RAM</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 7 Enterprise, 64-bit SP1</li> <li>• 2 GHz processor</li> <li>• 4 GB RAM</li> <li>• SVGA color monitor</li> <li>• 106-key Windows-ready integrated keyboard</li> <li>• MS-compatible mouse or pointing device</li> <li>• TCP/IP based network connection 100 Mbps, or</li> <li>• FLEXid dongle (bitlock), FLEXnet Publisher version 11.4 (for licensing)</li> <li>• 2.1 GB disk space</li> <li>• CD-ROM drive (not required if installing from a network location)</li> <li>• parallel port or USB port if dongle/bitlock used</li> <li>• video card with 3-D rendering capability, minimum 128MB video RAM</li> </ul>



# Installation

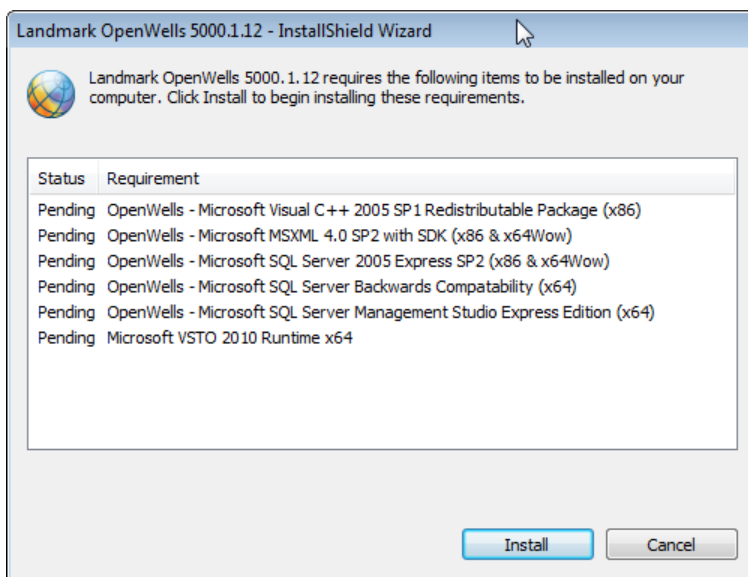
**Note:**

Additional details from the *EDT Drilling Summary Release Notes* may apply. To see the most up-to-date version of these release notes, visit the Landmark Software Management (LSM) site.

Installation files and documentation for the standalone version of the OpenWells® software are available from the Landmark Software Manager (LSM) site. Download the installation and documentation files from LSM and close any open applications before running the OpenWells® installer.

1. Open the folder where you downloaded the OpenWells® software and run `OpenWells_5000.1.12.0_Release.exe`.

The installer splash screen is displayed and the installer checks that required component software is available. If you are installing the OpenWells® software on a machine that does not have previous versions of the EDT applications installed, you must install required components.

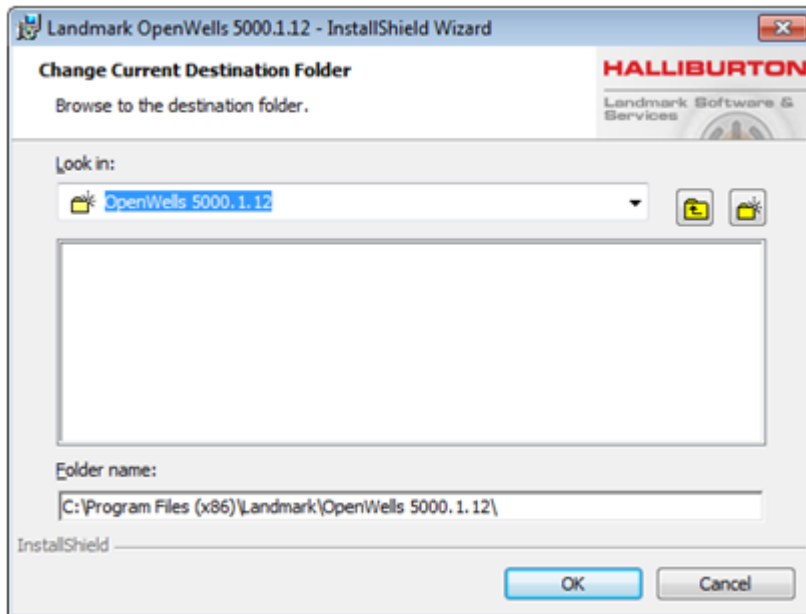


2. Click **Install** to install component software. Installer programs will be launched for each required component.

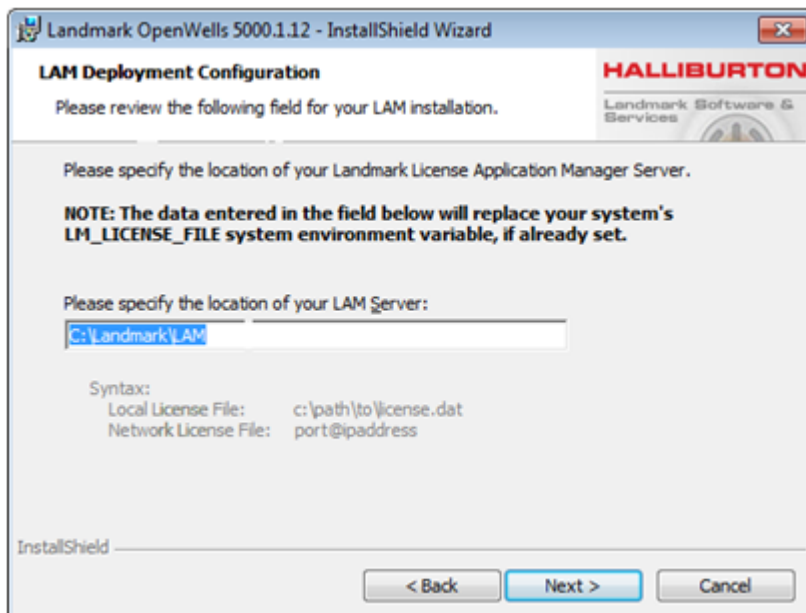
After all required components are successfully installed, the OpenWells® InstallShield Wizard will start. Click **Next >** to move forward through the installation steps. Click **< Back** to return to a previous step.

3. On the Destination Folder screen, click **Next** if the default installation folder is acceptable, or click the **Change** button to specify a different folder.

In the Change Current Destination Folder screen, you can create a new folder for the OpenWells software or you can use an existing folder. Click **OK** when your folder is specified correctly

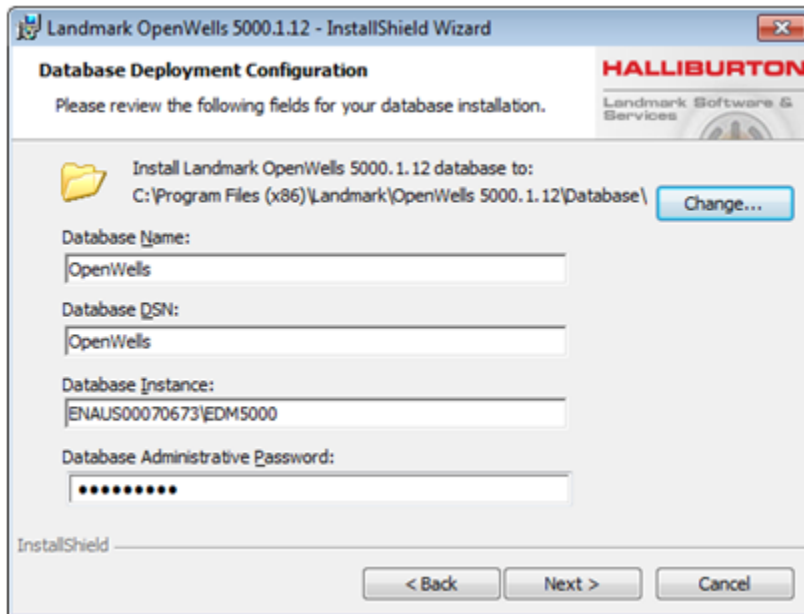


4. In the LAM Deployment Configuration screen, enter the path to your license.dat file or the port and IP address of the network LAM server, then click **Next**.



5. In the Database Deployment Configuration screen, enter the location of the EDM database to be used by the OpenWells software, then click **Next**.

The default instance name of an EDM database is “EDM5000”, the default database administrator is “sa” and the default administrative password is “Landmark1”.



6. When the Ready to Install screen is displayed, click **Install**.

The OpenWells installer will copy files, install the database, run scripts, and make any necessary configuration settings. A status bar shows the progress. When everything completes successfully, the InstallShield Wizard Completed screen is displayed.

7. Click **Finish**.

## Fixed Issues

### **EDM™**

Data model changes were made in support of enhancements and/or bug fixes. The EDM 5000.1.12.0 fixed issues are described below.

Defect	Description
924085	EPS Needs to support the '&' character in email addresses
924050	EPS fails to print the second report when using two templates (one per report) setup for processing at different times.
924045	Partners, Drilling Managers and Execs need to see the proper daily or summary report emailed to them by the EPS System in scenarios where the rig supervisors enters a "look ahead" report.
924042	The EPS system will freeze indefinitely in scenarios in which one report (of many) does not generate for any reason.
924030	EPS Admin Utility Fails to Properly Save changes
920034	A new field: how_guns_conveyed is needed on the table CD_PERF_INTERVAL
918640	Request new field: Gauged Annular Volume which is needed for the Cementing Report Fluid Volume Calculations.

## ***OpenWells® Fixed Issues***

The OpenWells® issues fixed for 5000.1.12.0 are described below.

<b>Defect</b>	<b>Description</b>
921745	Manual Rule Book Validation should not validate when user saves.
921744	As an OpenWells admin I need to be able to distinguish between two wellbores which have the same legal/common names when moving operations reports.
921743	Excess Slurry Volume calculation is incorrect
921742	OpenWells will create a duplicate definitive survey header in scenarios where a definitive survey header exists without an actual design.
921741	OpenWells data validation should prevent selection of 'Section Complete' when mandatory rules fail
921740	As a rig supervisor i need to have the data validation on my operations entry screen run whenever I check the "section complete" check box.
918555	CD_WELLBORE_OPENING needs wellbore_formation_id and reservoir_id to match what is in CD_PERF_INTERVAL.
880518	Require the ability to combine sections from Stimulation and Perforation reports into one report when using the Interactive Wellsite Interface.

## 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](#)
- [Technical Assistance Centers](#)
- [Regional Offices](#)

### 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 through 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.

## 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](mailto: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](mailto: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](mailto: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](mailto: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.

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3D Drill View, 3D Drill View KM, 3D Surveillance, 3DFS, 3DView, Active Field Surveillance, Active Reservoir Surveillance, Adaptive Mesh Refining, ADC, Advanced Data Transfer, Analysis Model Layering, ARIES, ARIES DecisionSuite, Asset Data Mining, Asset Decision Solutions, Asset Development Center, Asset Development Centre, Asset Journal, Asset Performance, AssetConnect, AssetConnect Enterprise, AssetConnect Enterprise Express, AssetConnect Expert, AssetDirector, AssetJournal, AssetLink, AssetLink Advisor, AssetLink Director, AssetLink Observer, AssetObserver, AssetObserver Advisor, AssetOptimizer, AssetPlanner, AssetPredictor, AssetSolver, AssetSolver Online, AssetView, AssetView 2D, AssetView 3D, Barrier Assurance Monitoring, BLITZPAK, CartoSnap, CasingLife, CasingSeat, CDS Connect, CGMage Builder, Channel Trim, COMPASS, Contract Generation, Corporate Data Archiver, Corporate Data Store, Data Analyzer, DataManager, DataServer, DataStar, DataVera, DBPlot, Decision Management System, DecisionSpace, DecisionSpace 3D Drill View, DecisionSpace 3D Drill View KM, DecisionSpace AssetLink, DecisionSpace AssetPlanner, DecisionSpace AssetSolver, DecisionSpace Atomic Meshing, DecisionSpace Base Module, DecisionSpace Desktop, DecisionSpace Geosciences, DecisionSpace GIS Module, DecisionSpace GRC Module, DecisionSpace Nexus, DecisionSpace Reservoir, DecisionSuite, Deeper Knowledge, Broader Understanding., Depth Team, Depth Team Explorer, Depth Team Express, Depth Team Extreme, Depth Team Interpreter, DepthTeam, DepthTeam Explorer, DepthTeam Express, DepthTeam Extreme, DepthTeam Interpreter, Desktop Navigator, DESKTOP-PVT, DESKTOP-VIP, DEX, DIMS, Discovery, Discovery 3D, Discovery Asset, Discovery Framebuilder, Discovery PowerStation, Discovery Suite, DMS, Drillability Suite, Drilling Desktop, DrillModel, DrillNET, Drill-to-the-Earth-Model, Drillworks, Drillworks ConnectML, Drillworks Predict, DSS, Dynamic Frameworks to Fill, Dynamic Reservoir Management, Dynamic Surveillance System, EDM, EDM AutoSync, EDT, eLandmark, Engineer's Data Model, Engineer's Desktop, Engineer's Link, ENGINEERING NOTES, eNotes, ESP, Event Similarity Prediction, ezFault, ezModel, ezSurface, ezTracker, ezTracker2D, ezValidator, FastTrack, Field Scenario Planner, FieldPlan, For Production, FrameBuilder, Frameworks to Fill, FZAPI, GeoAtlas, GeoDataLoad, GeoGraphix, GeoGraphix Exploration System, Geologic Interpretation Component, Geometric Kernel, GeoProbe, GeoProbe GF DataServer, GeoSmith, GES, GES97, GesFull, GESXplorer, GMAplus, GMI Imager, Grid3D, GRIDGENR, H. Clean, Handheld Field Operator, HHFO, High Science Simplified, Horizon Generation, I<sup>2</sup> Enterprise, iDIMS, iEnergy, Infrastructure, iNotes, Iso Core, IsoMap, iWellFile, KnowledgeSource, Landmark (*as a service*), Landmark (*as software*), Landmark Decision Center, LandNetX, Landscape, Large Model, Lattix, LeaseMap, Limits, LithoTect, LogEdit, LogM, LogPrep, MagicDesk, Make Great Decisions, MathPack, MDS Connect, MicroTopology, MIMIC, MIMIC+, Model Builder, NETool, Nexus (*as a service*), Nexus (*as software*), Nexus View, Object MP, OneCall, OpenBooks, OpenJournal, OpenLink, OpenSGM, OpenVision, OpenWells, OpenWire, OpenWire Client, OpenWire Server, OpenWorks, OpenWorks Development Kit, OpenWorks Production, OpenWorks Well File, Operations Management Suite, PAL, Parallel-VIP, Parametric Modeling, Permedia, Petris WINDS Enterprise, PetrisWINDS, PetroBank, PetroBank Explorer, PetroBank Master Data Store, PetroWorks, PetroWorks Asset, PetroWorks Pro, PetroWorks ULTRA, PLOT EXPRESS, PlotView, Point Gridding Plus, Pointing Dispatcher, PostStack, PostStack ESP, PostStack Family, Power Interpretation, PowerCalculator, PowerExplorer, PowerExplorer Connect, PowerGrid, PowerHub, PowerModel, PowerView, PrecisionTarget, Presgraf, PressWorks, PRIZM, Production, Production Asset Manager, PROFILE, Project Administrator, ProMAGIC Connect, ProMAGIC Server, ProMAX, ProMAX 2D, ProMax 3D, ProMAX 3DPSDM, ProMAX 4D, ProMAX Family, ProMAX MVA, ProMAX VSP, pSTax, Query Builder, Quick, Quick+, QUICKDIF, Quickwell, Quickwell+, Quiklog, QUIKRAY, QUIKSHOT, QUIKVSP, RAVE, RAYMAP, RAYMAP+, Real Freedom, Real Time Asset Management Center, Real Time Decision Center, Real Time Operations Center, Real Time Production Surveillance, Real Time Surveillance, Real-time View, Recall, Reference Data Manager, Reservoir, Reservoir Framework Builder, RESev, ResMap, Resolve, RTOC, SCAN, SeisCube, SEISINFO, SeisMap, SeisMapX, Seismic Data Check, SeisModel, SeisSpace, SeisVision, SeisWell, SeisWorks, SeisWorks 2D, SeisWorks 3D, SeisWorks PowerCalculator, SeisWorks PowerJournal, SeisWorks PowerSection, SeisWorks PowerView, SeisXchange, Semblance Computation and Analysis, Sierra Family, SigmaView, SimConnect, SimConvert, SimDataStudio, SimResults, SimResults+, SimResults+3D, SIVA+, SLAM, Smart Change, Smart Deploy, Smart Flow, Smart Skills, Smart Start, Smart Sustain, Smart Transform, Smart Vision, SmartFlow, smartSECTION, smartSTRAT, Spatializer, SpecDecomp, StrataMap, StrataModel, StratAmp, StrataSim, StratWorks, StratWorks 3D, StreamCalc, StressCheck, STRUCT, Structure Cube, Surf & Connect, SurfNet, SynTool, System Start for Servers, SystemStart, SystemStart for Clients, SystemStart for Servers, SystemStart for Storage, Tanks & Tubes, TDQ, Team Workspace, TERAS, T-Grid, The Engineer's DeskTop, Total Drilling Performance, TOW/cs, TOW/cs Revenue Interface, TracPlanner, TracPlanner Xpress, Trend Form Gridding, Trimmed Grid, Tubular Basic, Turbo Synthetics, Unconventional Essentials, VESPA, VESPA+, VIP, VIP-



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