OpenSpirit Ocean Petrel Application Adapter (OPAA) 2010

Table of Contents

Introduction 1
Welcome to the OpenSpirit Ocean Petrel Application Adapter 1
Welcome to the OpenSpirit Ocean Petrel Application Adapter 1
Installation 3
Prerequisites 3
Prerequisites 3
Installation Steps 3
Getting Started 7
The OpenSpirit Ocean Petrel Application Adapter Tool Bar 7
The OpenSpirit Ocean Petrel Application Adapter Tool Bar 8
Connecting to an Existing Project 9
User Setup Wizard 10
Create an OpenSpirit user 10
Secondary Desktop Account Setup 10
Setup a data server 11
Set user passwords 11
Session Wizard 12
Session project(s) 12
Passwords 13
Units 14
Coordinate System 14
Interpreters 14
Source Priority 16
Project Initiation Wizard 17
Setting the Project CRS (Coordinate Reference System) 17
Select from external OpenSpirit data source... 17
Select from existing OpenSpirit Session 18
Select from OpenSpirit EPSG list 19
Select from Petrel list 22
Confirming CRS Choice 23
Setting the Project CRS (Coordinate Reference System) 25
Select from external OpenSpirit data source... 26
Select from existing OpenSpirit Session 27
Select from OpenSpirit EPSG list 28
Select from Petrel list 31
Confirming CRS Choice 32
Setting the Project Units 34

Setting the Project SRD (Seismic Reference Datum) 36
Import Data 37
Import Overview 37
Data imported from external data store 37
Data imported from another application sending a data full event 44
Import Overview 46
Data imported from external data store 46
Data imported from another application sending a data full event 53
Import Match and Merge 55
Refresh from External.... 56
Seismic Datum Adjustments 58
Checkshot Import Options 59
Export Data 63
Export Overview 63
Export data to external data store 63
Export data to another application by sending a data full event 64
Export Overview 64
Export data to external data store 64
Export data to another application by sending a data full event 66
Restricting Export 66
OpenSpirit Data Manager 69
OpenSpirit Data Manager Overview 69
OpenSpirit Data Manager Overview 70
Data Summary 72
Check Data Source Accessibility 74
Check Datakey Validity 75
Save objects to source project 77
Export Objects 77
Refresh Objects 78
Link (or Relink) to External Project 80
Clear Datakeys 81
OpenWorks 2003 to R5000 Migration Workflow 83
GIS Integration 85
GIS Integration 85
GIS Integration 85
Event Interaction 87
Event Overview 87
Event Types 87
Enabling Events 87

Data Selection Events 87
GIS Events 88
Grid Events 88
Event Overview 88
Event Types 88
Enabling Events 89
Data Selection Events 89
GIS Events 89
Grid Events 89
Cursor Tracking 90
OpenSpirit settings 91
OpenSpirit Settings Overview 91
OpenSpirit Settings Overview 91
Export Defaults 92
General Options 93
Data Management Options 96
Help and Support Options 97
Configuration Files 101
Support File 101
Support File 101
Configuration File 102
Well Symbol Mapping Files 103
Glossary 105
Index 107

Introduction

Welcome to the OpenSpirit Ocean Petrel Application Adapter

The OpenSpirit Ocean Petrel Application Adapter (OPAA) is a plug-in for Petrel.

This may be used to:

- Import data from OpenSpirit enabled data stores.
- Export data to OpenSpirit enabled data stores.
- Maintain data consistency between Petrel project data and external OpenSpirit enabled data stores for selected data items using customizable match and merge rules.
- Send and receive GIS and Grid spatial features between Petrel and other OpenSpirit enabled applications (e.g. ESRI's ArcMap)
- Track cursor positions between OpenSpirit enabled applications.

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- Track cursor positions between OpenSpirit enabled applications.

Installation

Prerequisites

The OpenSpirit Ocean Petrel Application Adapter 2010 requires the following software be installed prior to installation:

- Petrel 2009.2, Petrel 2010.1, or Petrel 2010.2
- OpenSpirit runtime v3.2.1 (or newer)

The supported Windows versions are those that Petrel supports (OOPA is available in both 32 or 64 versions to match the version of Petrel that is being used).

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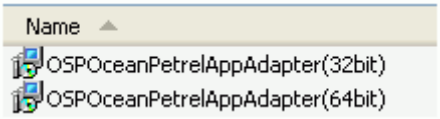
- OpenSpirit runtime v3.2.1 (or newer)

The supported Windows versions are those that Petrel supports (OOPA is available in both 32 or 64 versions to match the version of Petrel that is being used).

Installation Steps

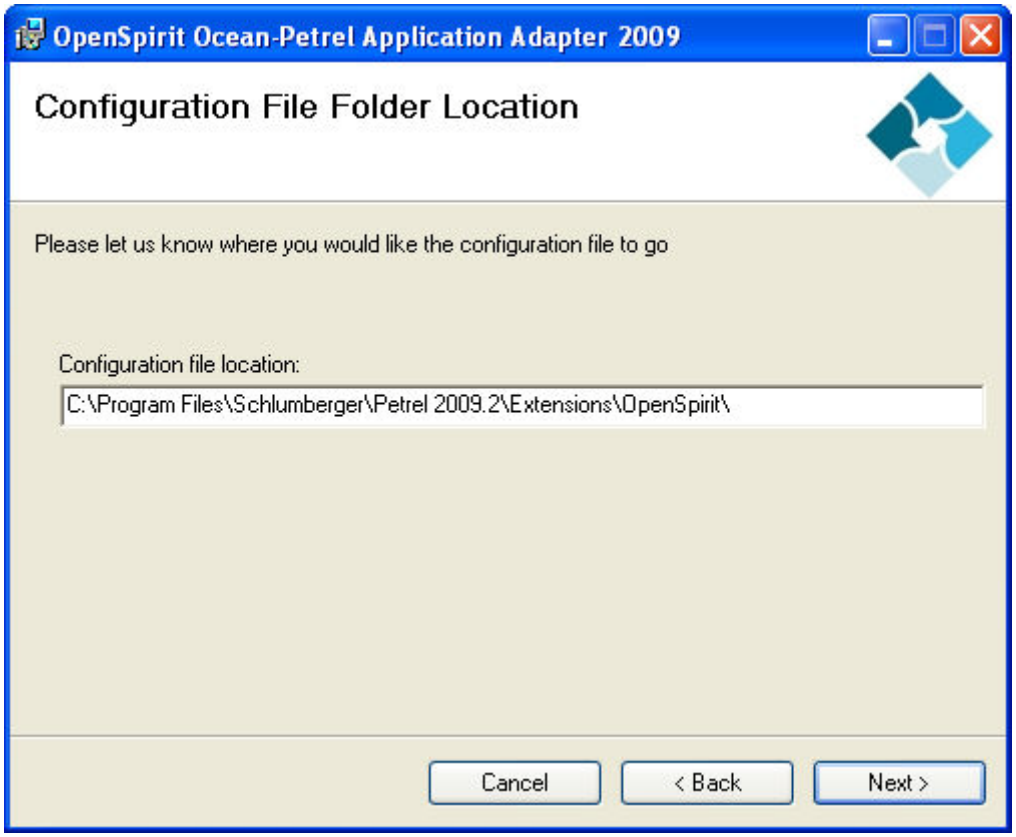
1. Download the plug-in installer and unzip to a convenient directory:



2. Double click the OSPOceanPetrelAppAdapter*.msi file

3. Follow the installation wizard and click the "Next>" Button when prompted

4. At this step you will indicate where you want the configuration file to go. By default, it will be placed in the OpenSpirit extension directory in the Petrel installation directory. The field is editable and any visible directory may be entered. The field may be user specific or point to a common shared directory so that all Petrel users in a site get the same business rules for importing and exporting data.



5. After a successful installation the OpenSpirit tool bar should appear in Petrel the next time it is launched.

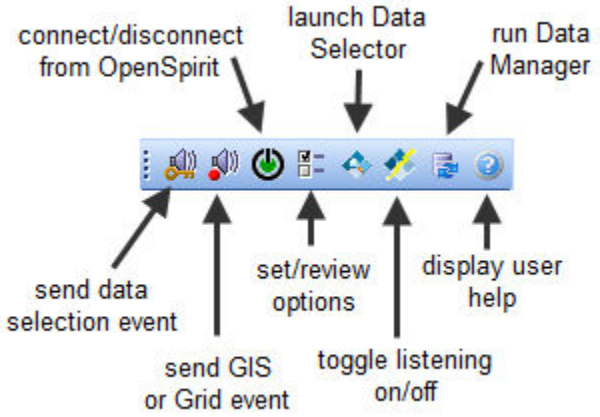
Getting Started

The OpenSpirit Ocean Petrel Application Adapter Tool Bar

After installation of the OpenSpirit Ocean Petrel Application Adapter you will see this tool bar appear in Petrel:

The starting state of the tool bar indicates that Petrel is not connected to OpenSpirit: the on/off button is in the off state as symbolized by the red icon.

In order to connect to OpenSpirit simply click on the red on/off button. If you have a Petrel project open that already has a coordinate reference system (*CRS*), unit preferences, and a *SRD* (Seismic Reference Datum) assigned then the connection button turns green and all the tool bar icons are enabled like this:



If, however, you have not opened a project, or the project has no assigned *CRS* then you will see the Project Initiation Wizard appear. After walking through this wizard all the OpenSpirit toolbar icons should be active.

Note: If the Windows account you are using to run Petrel has never been used with OpenSpirit previously, the first time you connect to OpenSpirit you will be prompted to complete the OpenSpirit User Setup Wizard.

If you have the "Start Data Selector when I click finish " option enabled in the OpenSpirit settings then the OpenSpirit Data Selector will automatically be launched and you can proceed to select data to import via drag and drop or sending selection events. Otherwise you can manually launch the Data Selector from the OpenSpirit toolbar icon.

If you have set the Petrel project *CRS* by selecting an external project via OpenSpirit then the Data Selector will be started with this project open. If not, then the Session Wizard will be started to allow you to select the project(s) you wish to import data from.

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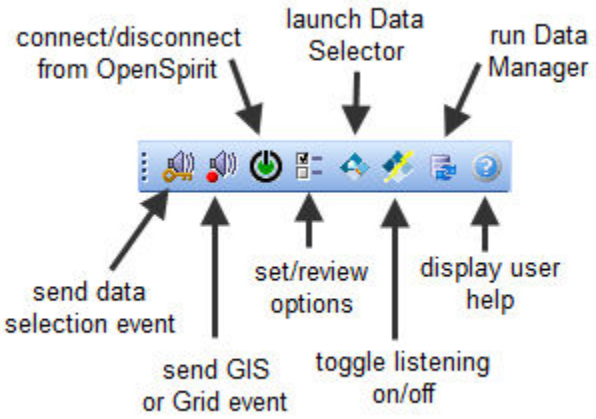

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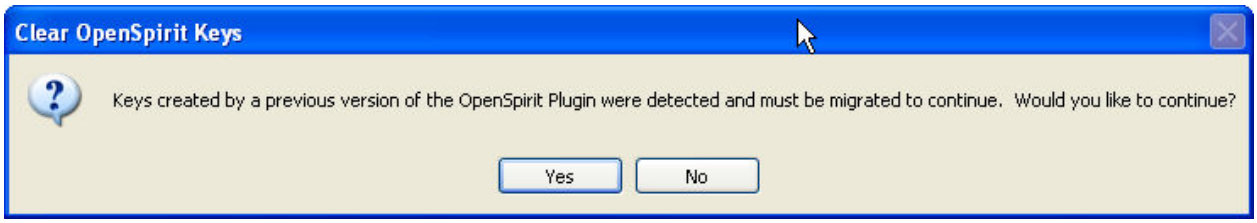
If you have set the Petrel project *CRS* by selecting an external project via OpenSpirit then the Data Selector will be started with this project open. If not, then the Session Wizard will be started to allow you to select the project(s) you wish to import data from.

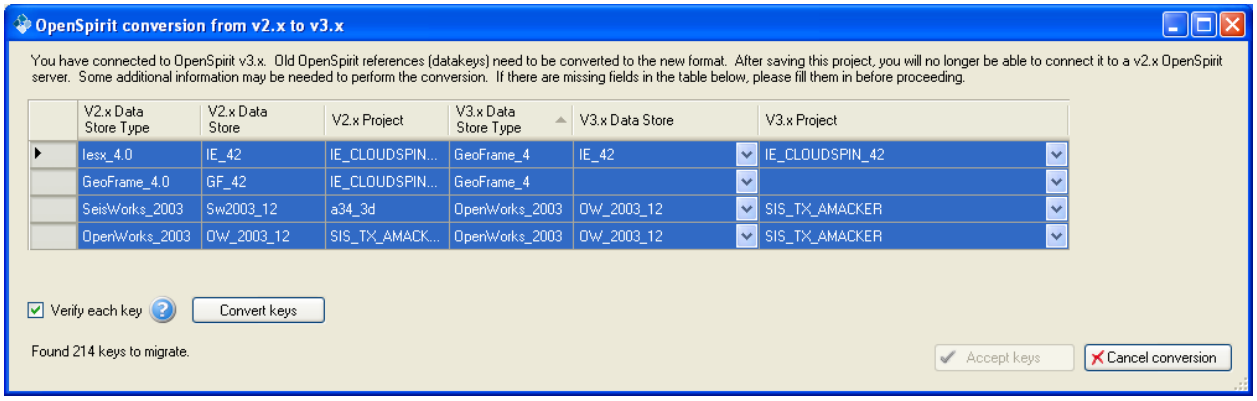
Connecting to an Existing Project

If you connect to OpenSpirit and you have a project open that has been created using an earlier version of the Schlumberger OpenSpirit Petrel Plug-In (as opposed to the OpenSpirit Ocean Petrel Application Adapter) then the *datakeys* stored in the Petrel project will need to be migrated to a different storage mechanism (accessible via Ocean). This dialog will appear:



If you choose to migrate the *datakeys* then these *datakeys* will no longer be accessible to the older Schlumberger OpenSpirit Petrel Plug-In but can be used by the OpenSpirit Ocean Petrel Application Adapter.

If you have a Petrel project that was created using an older version of the Schlumberger OpenSpirit Petrel Plug-In that used OpenSpirit version 2.x (as opposed to any 3.x version) then the datakey formats will need be updated and you may be prompted to supply additional information (in the case of data imported from SeisWorks you will be prompted to supply the associated OpenWorks project name). An example of this dialog is shown below:



You will need to select the corresponding output store and project, convert the keys, and then accept the new key values.

User Setup Wizard

The User Setup Wizard will walk you through creating a new OpenSpirit user account, and configuring your dataserver activation settings. This is done the very first time that you connect to OpenSpirit.

The User Setup Wizard walks you through the following panels.

Create an OpenSpirit user

When you start OpenSpirit for the first time, the OpenSpirit User Setup Wizard automatically starts. This will register your current Windows or UNIX userid as your OpenSpirit primary desktop account. OpenSpirit enters this userid in its internal database and uses this area to keep track of your OpenSpirit preferences. These preferences are then available from any host computer that you log onto as long as you log in under the same userid. The New User Account Setup will only run the first time you start OpenSpirit.

Secondary Desktop Account Setup.

The Secondary Desktop Account Setup panel is presented after your OpenSpirit primary desktop account is created. A secondary account may be needed if you want to run OpenSpirit applications on Windows and UNIX (i.e. Linux or Solaris) using different userids.

If your UNIX and Windows userids are the same, then leave the field blank, you do not need to configure a secondary desktop account. When you have different UNIX and Windows userids and you register one of them as a secondary desktop account, your OpenSpirit user preferences will appear the same from both accounts. The secondary desktop account also allows you to share OpenSpirit interaction events, like data selection events and cursor tracking events, between applications running under different userids. Normally user interaction events are only shared between processes running under the same userid, potentially on different host computers. For example, if you are running an OpenSpirit enabled application on Windows and your userid is "ms-user" and you are also running an OpenSpirit enabled application on Linux using a userid "ln-user", you should register one of the userids as your primary account and the other as a secondary account. It is best to use the userid you use most often to run OpenSpirit applications as your primary account. A userid cannot be registered as both a primary account and a secondary account. You will need to have your OpenSpirit installation administrator use the OpenSpirit User Manager tool to delete one of the primary accounts if you mistakenly register both of your userids as primary accounts. The userid associated with the deleted primary account will then become available for use as a secondary account. You can un-register a secondary desktop account by blanking out the field and continuing with the wizard to a successful finish.

Setup a data server

OpenSpirit has the capability to remotely start application data connectors (GeoFrame, OpenWorks, Finder, etc.) across different operating systems such as Solaris and Linux. This capability is commonly used when running applications on Windows, like the OpenSpirit Ocean Petrel Application Adapter, that need access to data that is only available on Solaris or Linux . The *data connector* setup panels are used to provide OpenSpirit with the host, account, and password information needed to run *data connector* processes to service requests for data made by OpenSpirit enabled applications. The information is encrypted and stored as part of your user preference data in the OpenSpirit proprietary database (unless your company has disabled this feature). Windows data connectors can only be run on a Windows host that is running your OpenSpirit Launcher or DataSelector. No *data connector* setup is needed for Windows data connectors (Kingdom, Petra, etc.). The Data Server Setup allows you to enter a SunOS (Solaris), or Linux host, user account and password. This will become the default host for any OpenSpirit *data connector* that runs on the associated platform. The Host entry field contains a Test button on the right of each row that can be used to validate the host, account, and password entered for the platform default. If you always want to use this host for every OpenSpirit data store, then check the Use default values for all Data Servers radio button. If you leave the default Allow Data Servers to be independently configured checked, then when you select Next, you will be presented with a list to choose a host for every data store. OpenSpirit data connectors must be able to run in their native operating system environment. The host, account, and password should be able to run the application outside of OpenSpirit. If you want to change a few of the data connectors use Alt and Ctl function keys and click on the Data Sources you want to change and then click on Edit selected rows.

Set user passwords

The last step in the OpenSpirit Setup Wizard allows the user to set project passwords. This will give you the opportunity to enter project passwords for all the relevant projects. OpenSpirit utilizes the access control mechanism of the underlying data source so project passwords are only needed if the native application requires them. If you elect not to enter

project passwords at this time you will be prompted to do so later when you use a project that requires one.

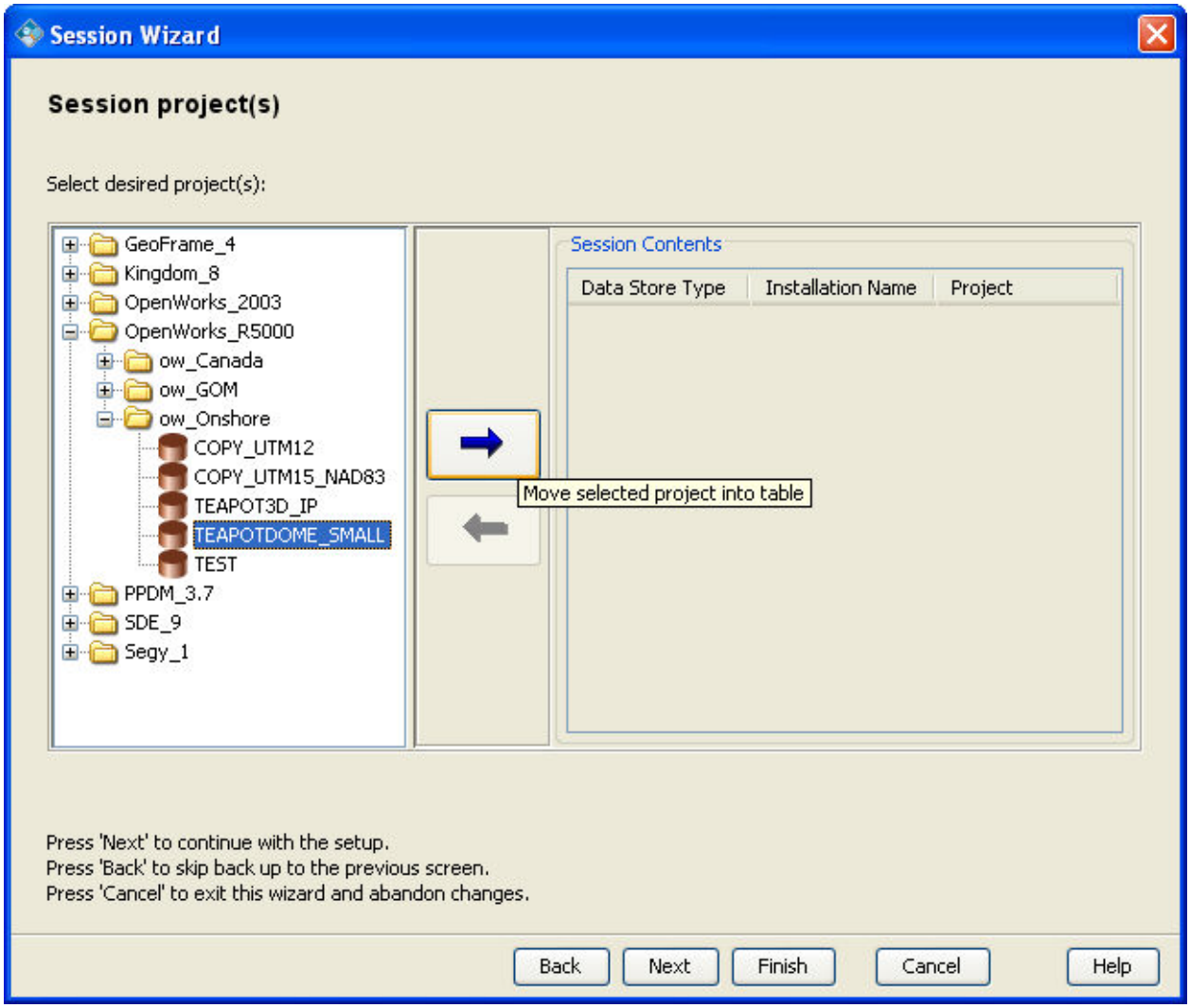
- OpenWorks, Recall, Managed Segy and Petra - no account or password is required.
- GeoFrame - A project password is required. You may click, using the right mouse button, on the Password column header to set the passwords of all the GeoFrame projects to the project name. The Password field will automatically be filled out with the project name. You can then edit the password of any GeoFrame project that does not match the project name.
- Finder - Oracle account and password. Externally authenticated Finder accounts cannot be used.
- PPDM - Oracle account and password.
- Kingdom - Entering Kingdom passwords depends upon the type of Kingdom project database your project uses. If the Kingdom project database is MS Access, enter the Kingdom author for both the account and password field. If the Kingdom project database is Oracle, the account should be the Oracle database login user followed by a semi-colon and then the Kingdom project author name. The password should be the Oracle database login user password.
- SDE - Oracle SDE user and associated Oracle password.

Session Wizard

The Session Wizard guides you through the steps of creating an OpenSpirit Session, including selecting the data source projects and unit and coordinate system preferences. When the session wizard is launched from the OpenSpirit Ocean Petrel Application Adapter the session name, *CRS*, and unit preferences are already set based on the Petrel project. Interpreter and source priority preferences may also be set if selecting data from an OpenWorks project. Navigation through the Session creation steps is accomplished by clicking on the Next and Back buttons found at the bottom of each of the Session Wizard panels. The Next button takes you to the next panel. The Back button takes you to the previously displayed panel. Navigating backward using the Back button will not cause you to loose any entries already made. A Cancel button is available on all of the wizard panels. Click Cancel to close the wizard discarding any changes. A Finish button is available on all of the wizard panels if the wizard is being used to edit an existing Session. The Finish button only appears on the last panel if the wizard is being used to create a new Session. Click Finish to close the wizard saving any changes that have been made. No changes are saved until the Finish button is pressed.

You will advance through the following steps in the wizard:

Session project(s)



Choose the project(s) you want to access. You can combine data from one or several diverse project data sources into a single Session. The tree on the left side of the panel organizes all of the available projects in a hierarchy of data store type, data store instance, and project. The tree does not display projects that you do not have permissions to access. Expand the tree to select a project. The right arrow will turn blue when you select a project of interest. Press the right arrow to add the project to your Session. Projects that are already in the Session will appear green and will be in the list on the right of the panel. Projects not included in the Session appear brown in the tree. You can remove projects from the Session by selecting them from the list on the right side and clicking on the left blue arrow.

It is best not to add unnecessary projects to your Sessions as there is an overhead for each additional project. After you have picked the project(s) you are interested in, click Next which will take you to the Passwords panel or to the Units panel.

Passwords

This panel gives you the opportunity to enter passwords for all projects included in the Session that require an account and/or password to access. The panel will not appear if

none of the projects selected for inclusion in the Session require account or password information. OpenSpirit utilizes the access control mechanism of the underlying data source, so accounts and passwords are only needed if the native application requires them. Projects in the Session that do not require account or password information will not appear on this panel.

- OpenWorks, Recall, Managed Segy and Petra - no account or password is required.
- GeoFrame - a project password is required. You may click using the right mouse button on the Password column header to set the passwords of all the GeoFrame projects to the project name. The Password field will automatically be filled out with the project name. You can then enter information for any non-GeoFrame projects or edit the password of any GeoFrame project that does not match the project name.
- Finder - Oracle account and password. Externally authenticated Finder accounts cannot be used.
- PPDM - Oracle account and password.
- Kingdom - Entering Kingdom passwords depends upon the type of Kingdom project database your project uses. If the Kingdom project database is MS Access, enter the Kingdom author for both the account and password field. If the Kingdom project database is Oracle, the account should be the Oracle database login user followed by a semi-colon and then the Kingdom project author name. The password should be the Oracle database login user password.
- SDE - Oracle SDE user and associated Oracle password.

After your Passwords have been set, click the Next button which will take you to the Units panel.

If you have no OpenWorks projects or don't care to set Interpreter or Source Priority preferences you may click the Finish button.

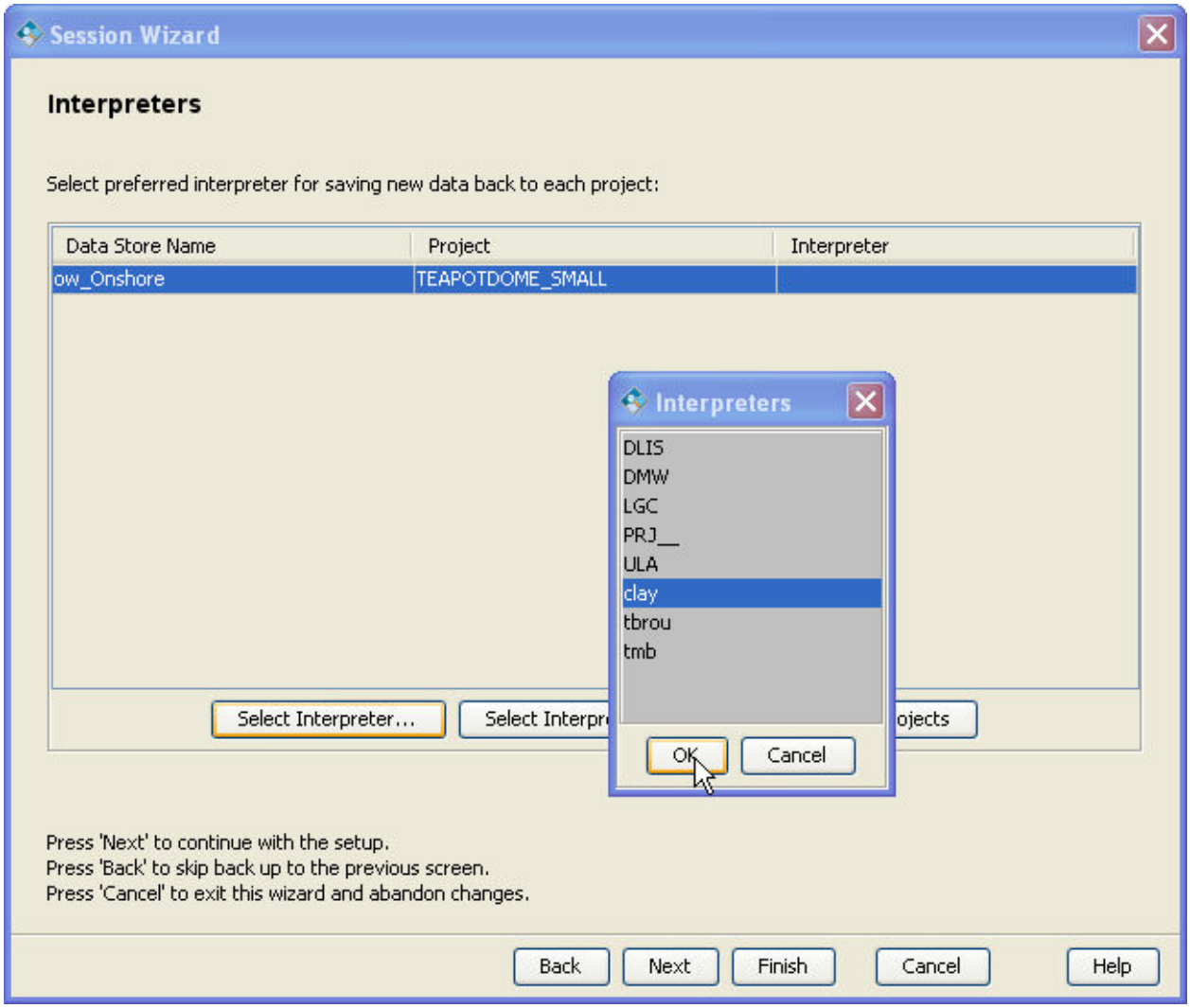
Units

The session's Unit preferences are already set based on the Petrel Unit preferences so you can click "Next" to advance to next panel.

Coordinate System

The session's *CRS* preference is already set based on the Petrel *CRS* so you can click "Next" to advance to next panel.

Interpreters



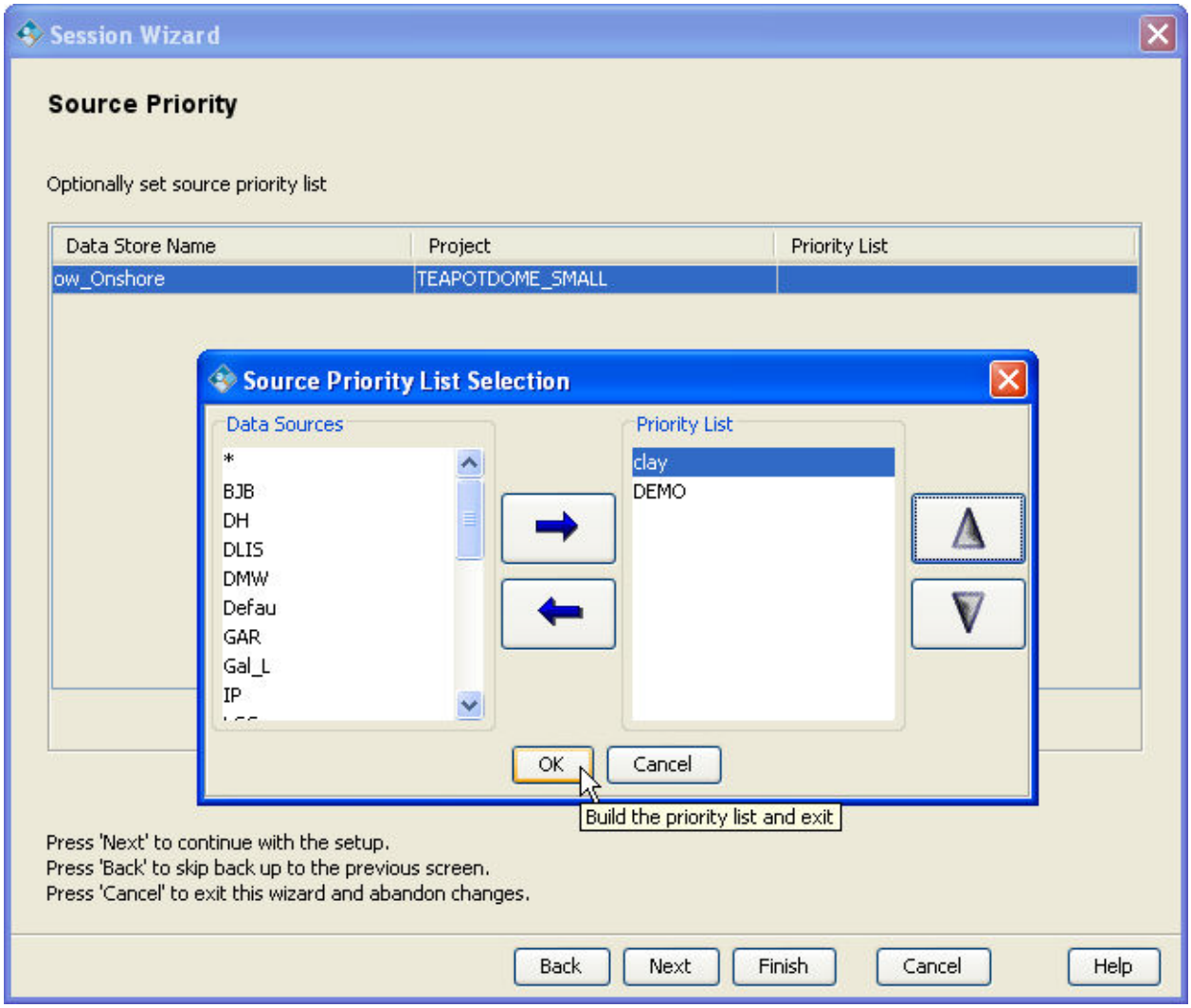
This panel is used to optionally establish the OpenWorks interpreter to be used when manipulating data in an OpenWorks project. Setting the Interpreter ensures the proper identification and storage of newly created OpenWorks interpretation data. You are not required to select an interpreter, but are strongly encouraged to do so if you intend to create any OpenWorks interpretation data using this Session.

You can select an interpreter for a subset of the displayed OpenWorks projects by highlighting one or more projects and clicking on the Select Interpreter button. OpenSpirit will then query OpenWorks and present you with a list of all the available interpreters common to the selected projects. A *data connector* process may need to be started at this time. This can take anywhere from a few seconds to a couple of minutes to start depending on the type of *data connector* and the processing speed and load of the computer that is used to run the *data connector*.

Select an interpreter from the list that pops up once the OpenWorks *data connector* has been queried. An error dialog will be displayed if there is not at least one interpreter common to all of the selected projects. Click the Select Interpreter For All button if you want to use a single interpreter for all of the displayed OpenWorks projects. This is merely a convenience feature that saves you the effort of highlighting all of the projects. The interpreter selection list will only contain interpreters that are common to all of the listed projects.

Click the Next button after you are finished setting your interpreter preferences. This will take you to the Source Priority panel.

Source Priority



The Source Priority panel is displayed if your Session includes any OpenWorks projects. The Source Priority panel enables you to create and associate a source priority list for each OpenWorks project included in your Session. A source priority list defines a ordered list of preferred interpreters used when retrieving data. It may be optionally used in the OpenSpirit Data Selector to only show the highest priority picks when multiple picks occur for the same formation made by different interpreters.

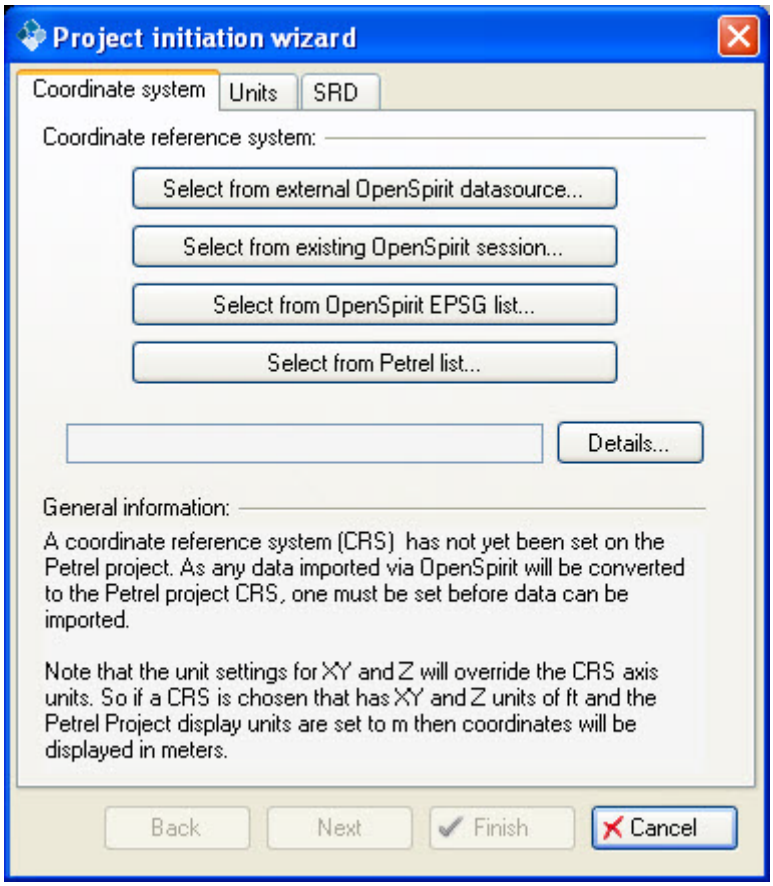
Click the Finish button after you are finished setting your source priority preferences.

The OpenSpirit Data Selector will then be displayed and you can select data to import to Petrel.

Project Initiation Wizard

Setting the Project CRS (Coordinate Reference System)

The Project Initiation wizard forces you to choose a coordinate reference system (*CRS*) to use for the Petrel project. As shown in the Project Initiation wizard, you have four different methods of selecting the *CRS*. A *CRS* must be set before importing or exporting data via OpenSpirit as OpenSpirit automatically does any required coordinate transformations and must know the *CRS* of the Petrel project.

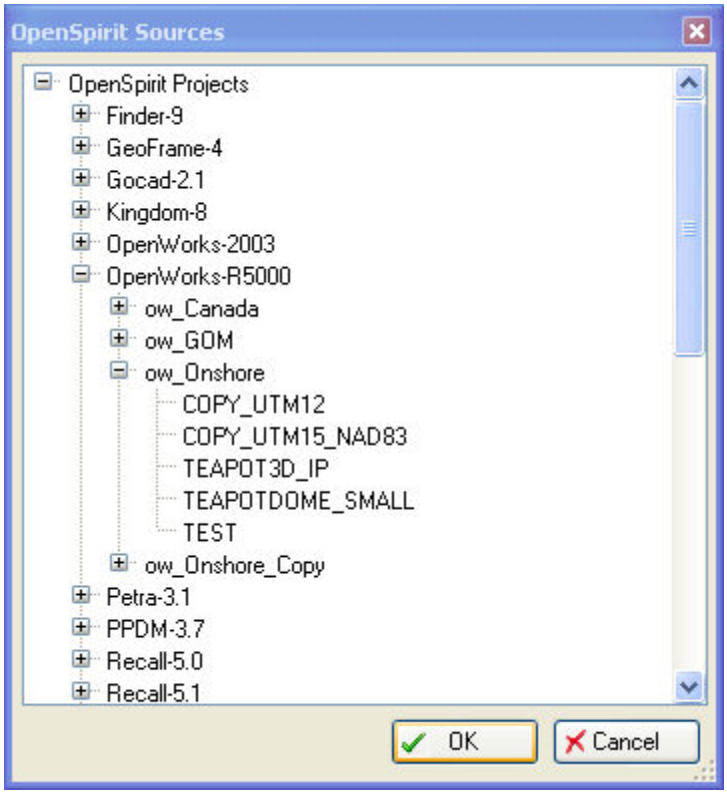


Select from external OpenSpirit data source...

In this option you select an existing external project (e.g. an OpenWorks , GeoFrame, Kingdom, etc... project) and then OpenSpirit will connect to this project and read its *CRS* details.. This *CRS* will then be used as the Petrel project *CRS*. This option allows you to use any standard predefined or custom *CRS* that may be defined in the external project.

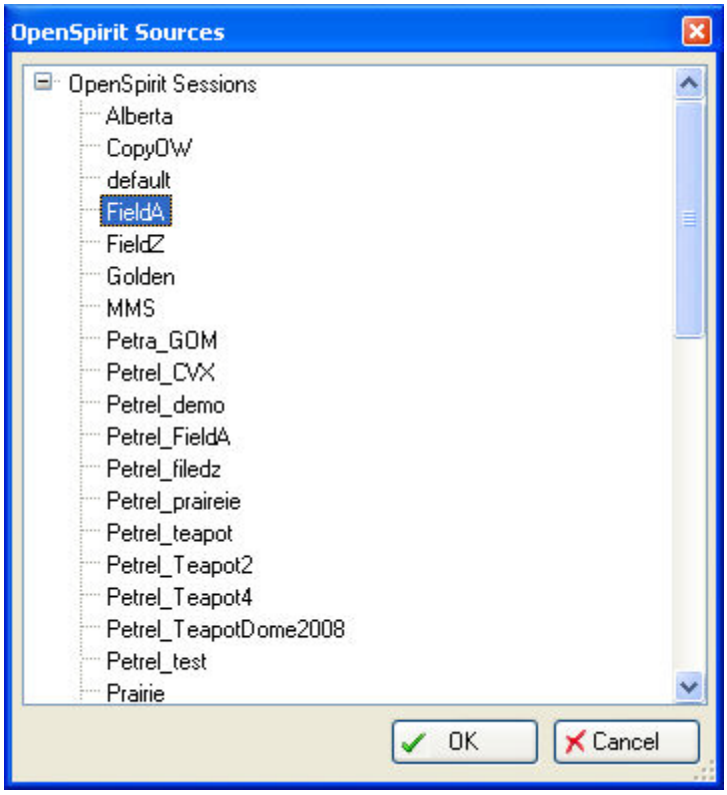
Notes:

1. Petrel requires a *CRS* that is a map projection system. Some external data stores may allow a user to set a project *CRS* as a geographic system- these projects can not be used to define the Petrel project *CRS*.
2. In addition, when an external project is chosen to define the Petrel project *CRS* the preferred *datum shift* to WGS84 that is defined in the chosen project will also be set as the preferred *datum shift* to WGS84 in Petrel. This *datum shift* will then be used by the *application adapter* when exchanging data between a Petrel project and an external data store if they have differing geodetic datums.



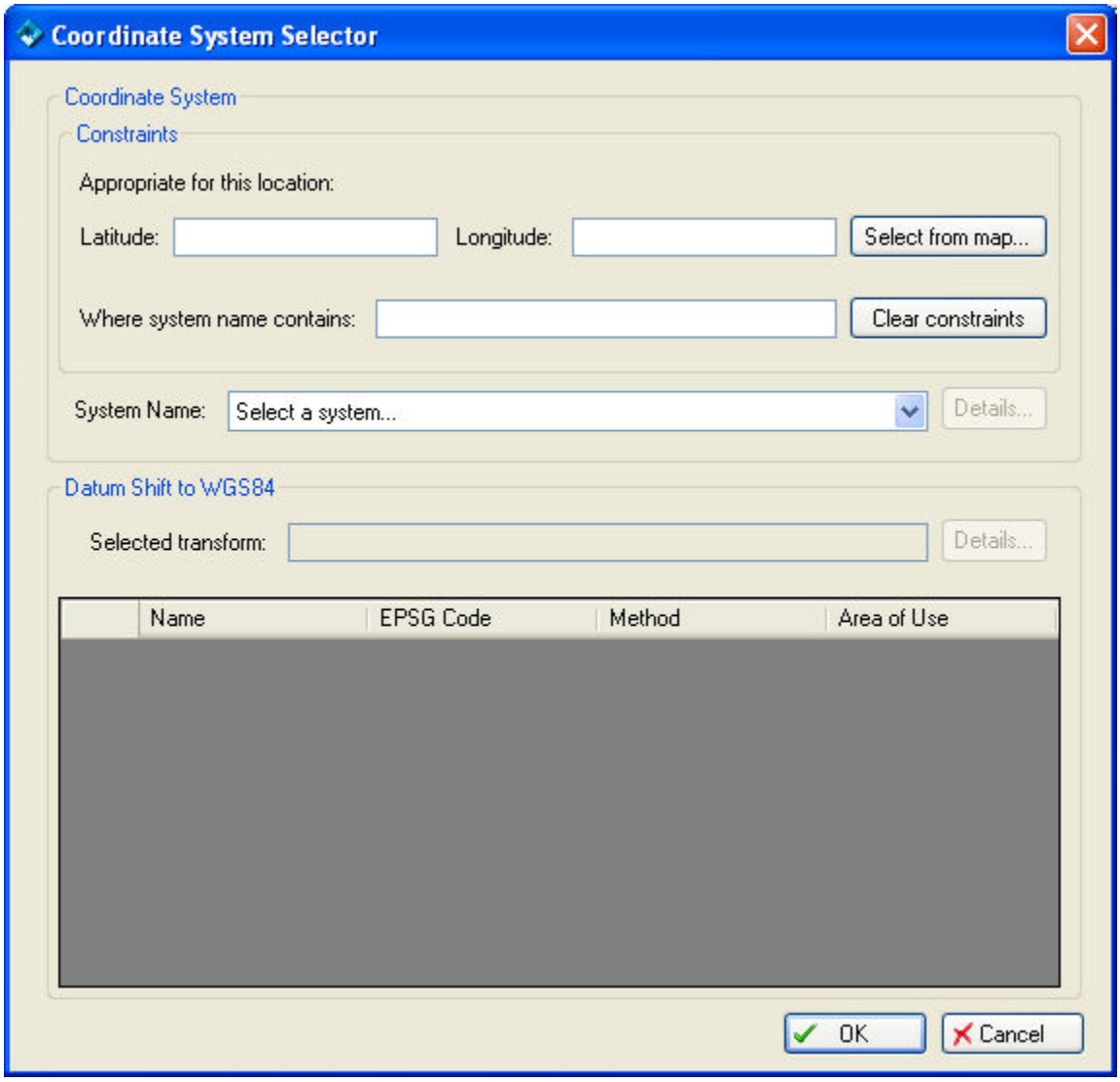
Select from existing OpenSpirit Session...

In this option you select an existing OpenSpirit session that has a preferred *CRS* already set on it. The OpenSpirit Session *CRS* is, in turn, obtained from a selected external project (e.g. OpenWorks, GeoFrame , Kingdom , etc...) that was chosen in the OpenSpirit session wizard.



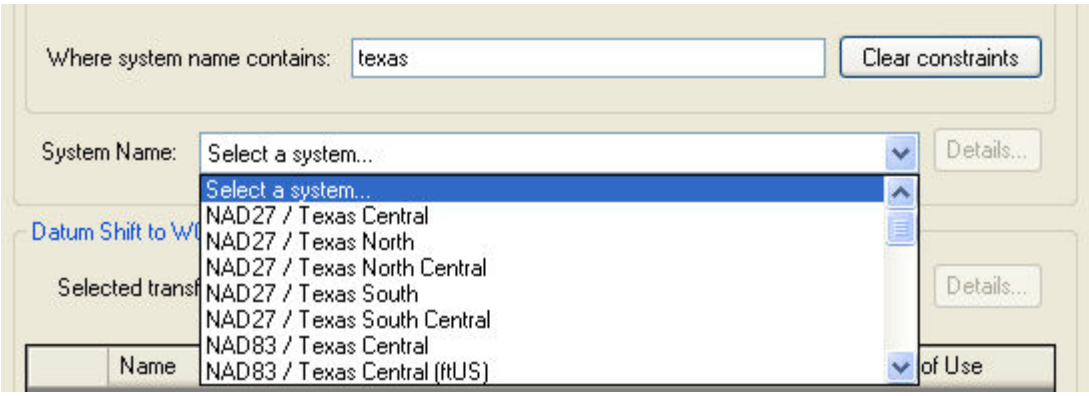
Select from OpenSpirit EPSG list...

In this option you select a predefined EPSG *CRS* from the OpenSpirit catalog that is referenced by your OpenSpirit installation.

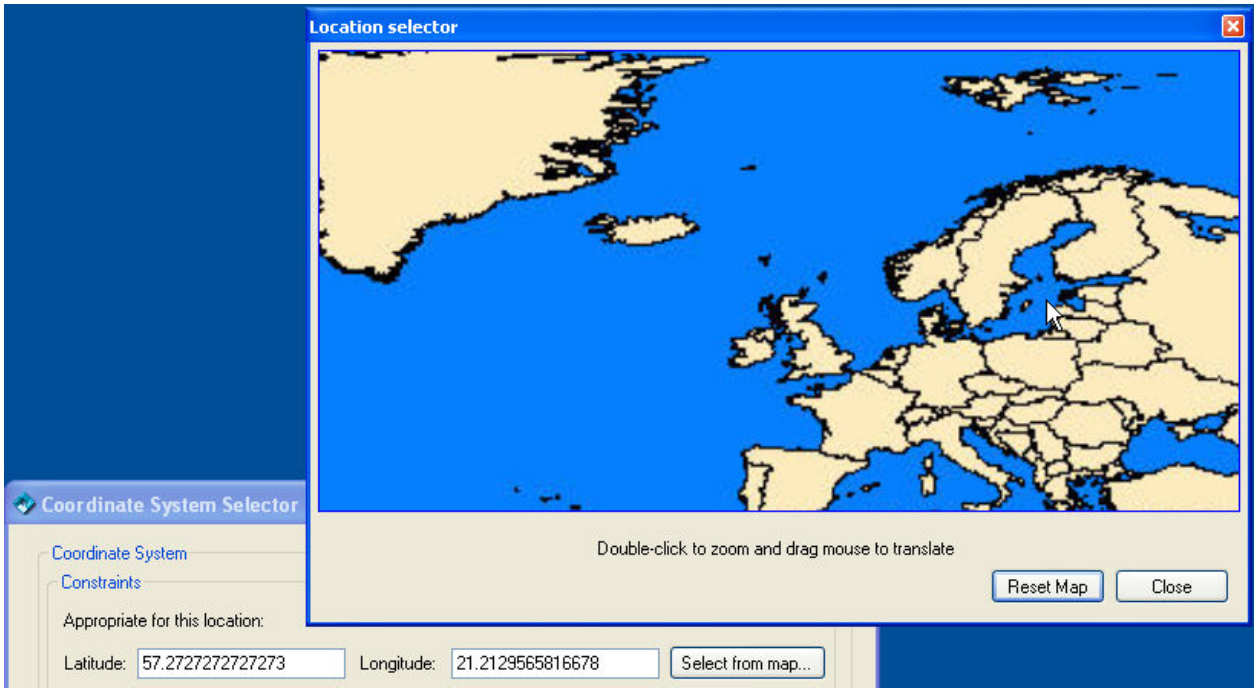


To select a *CRS* and an associated preferred *datum shift* you should follow these steps.

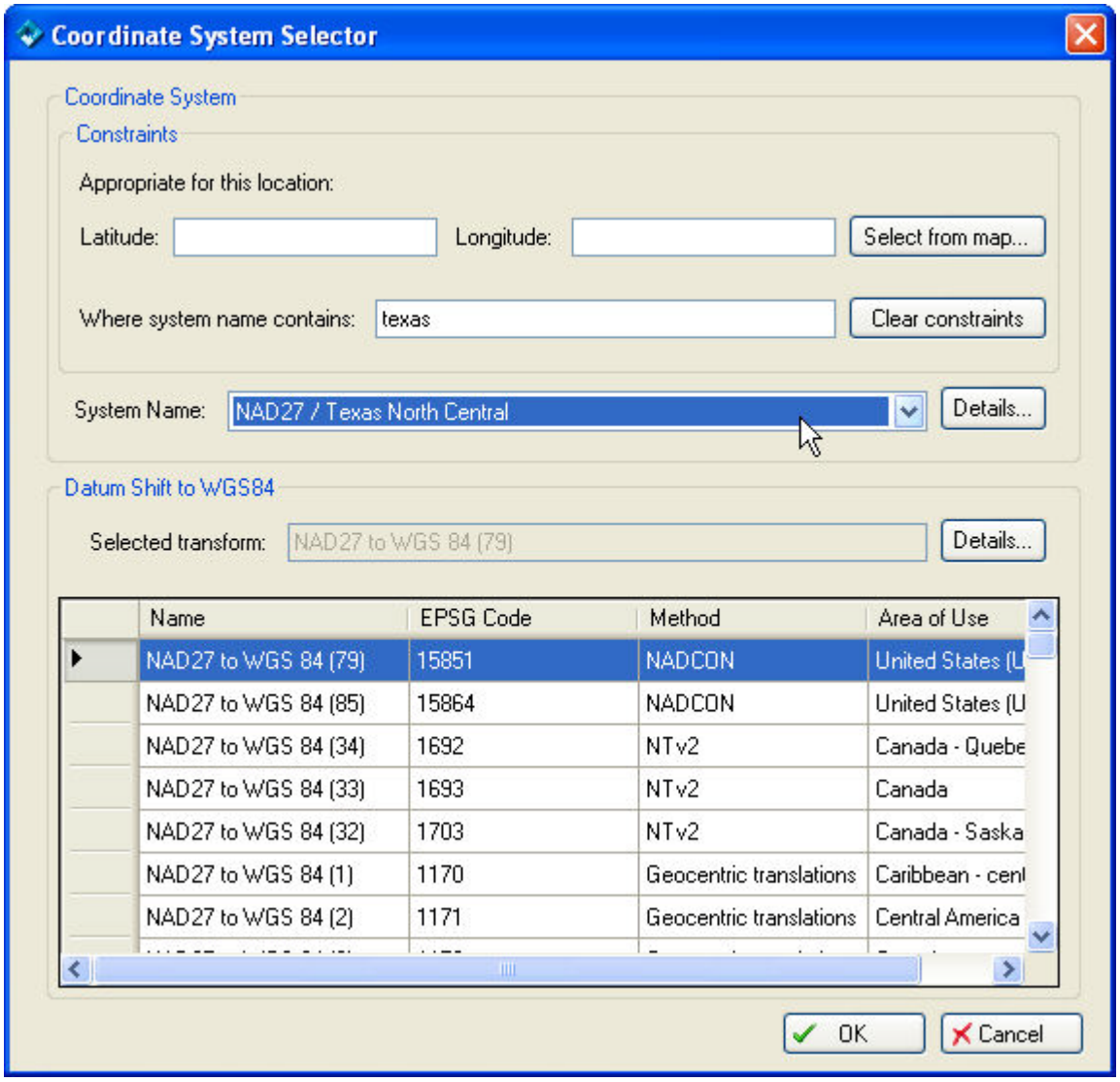
1. Optionally filter the list of available *CRS* names by entering a text fragment (case insensitive)



2. Optionally filter the list of available *CRS* names by entering a location by either typing in a latitude/longitude or selecting a point on the index map. Then only those map projection systems that are valid at this point on the globe (based on the area of applicability in the EPSG catalog) will be available for selection.



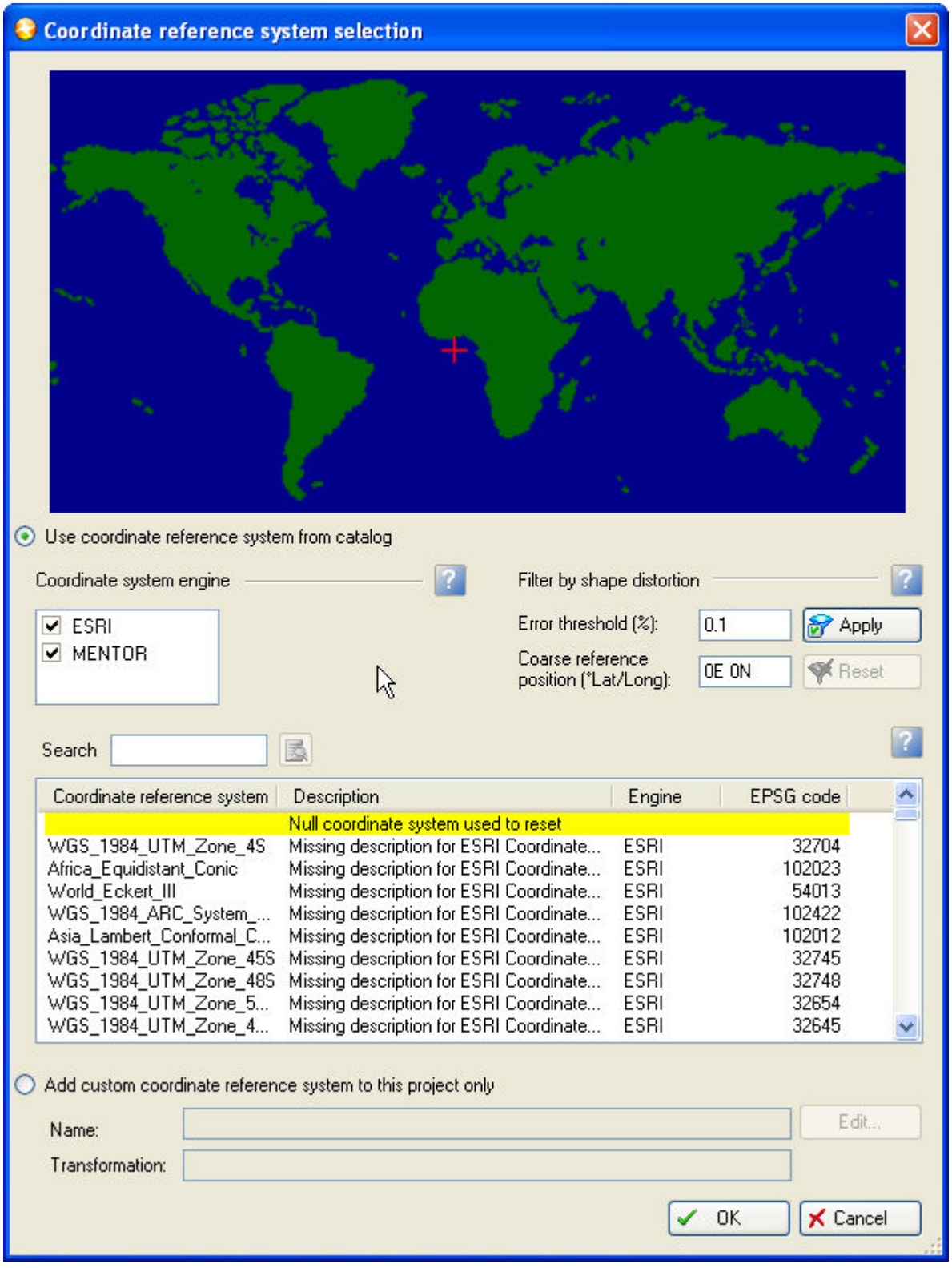
3. Select a System name from the drop down list. You may optionally inspect all its details (e.g. its EPSG parameters names and values) to help confirm your choice.



4. Then if the chosen *CRS* has a datum other than WGS84 you will be presented a list of datum shifts. You should choose one. Again, you may inspect its details to help select one. Many users may find it helpful to consult a data manager, GIS specialist, or geodesist within their company who may be more familiar with selecting an appropriate *CRS* and *datum shift* for your area of interest.

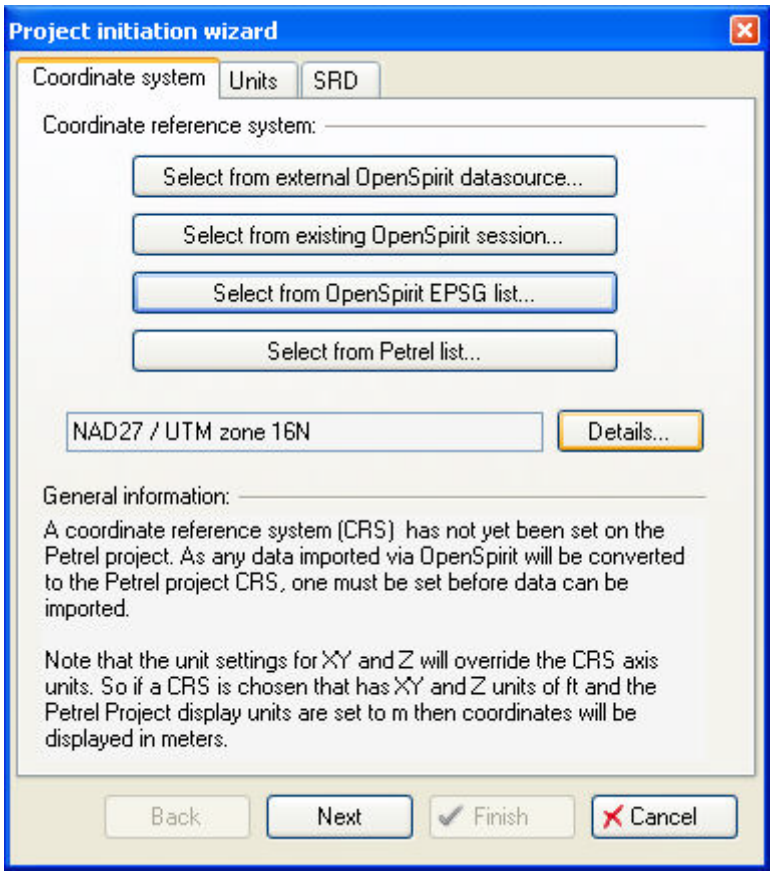
Select from Petrel list...

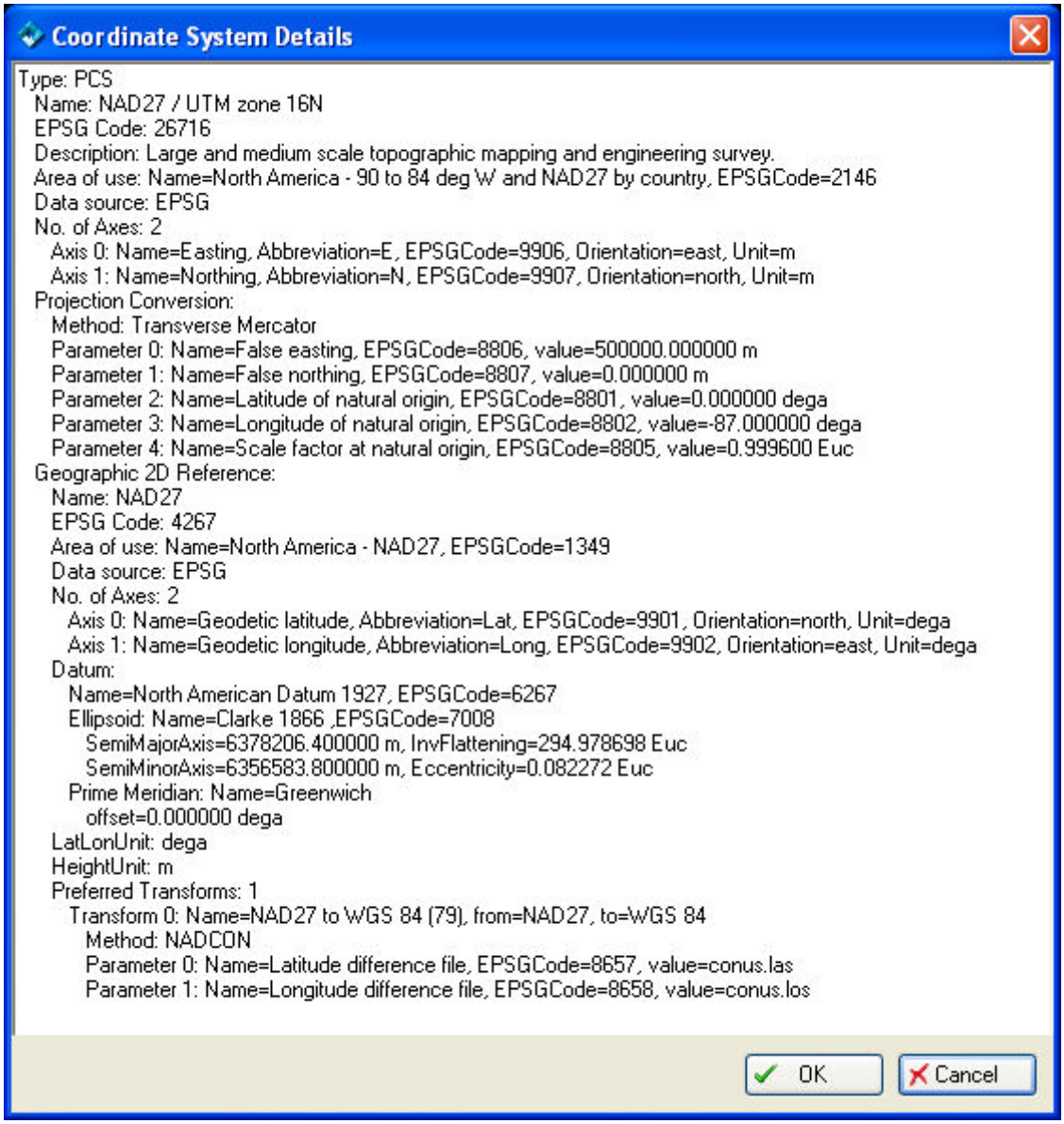
This option brings up the normal Petrel coordinate system selection dialog. Choose a *CRS* from this list.



Confirming CRS Choice

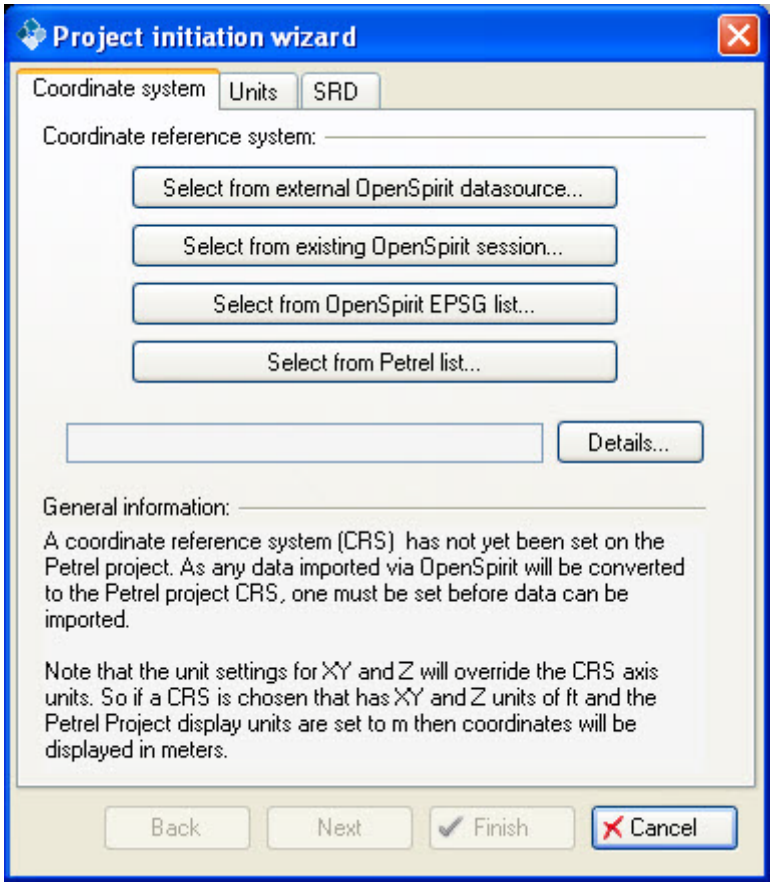
Regardless of which method was used to select a *CRS* you will see the choice reflected in the Project initiation wizard and have one last chance to inspect its details before advancing to the next step in the wizard by clicking the Next button.





Setting the Project CRS (Coordinate Reference System)

The Project Initiation wizard forces you to choose a coordinate reference system (*CRS*) to use for the Petrel project. As shown in the Project Initiation wizard, you have four different methods of selecting the *CRS*. A *CRS* must be set before importing or exporting data via OpenSpirit as OpenSpirit automatically does any required coordinate transformations and must know the *CRS* of the Petrel project.

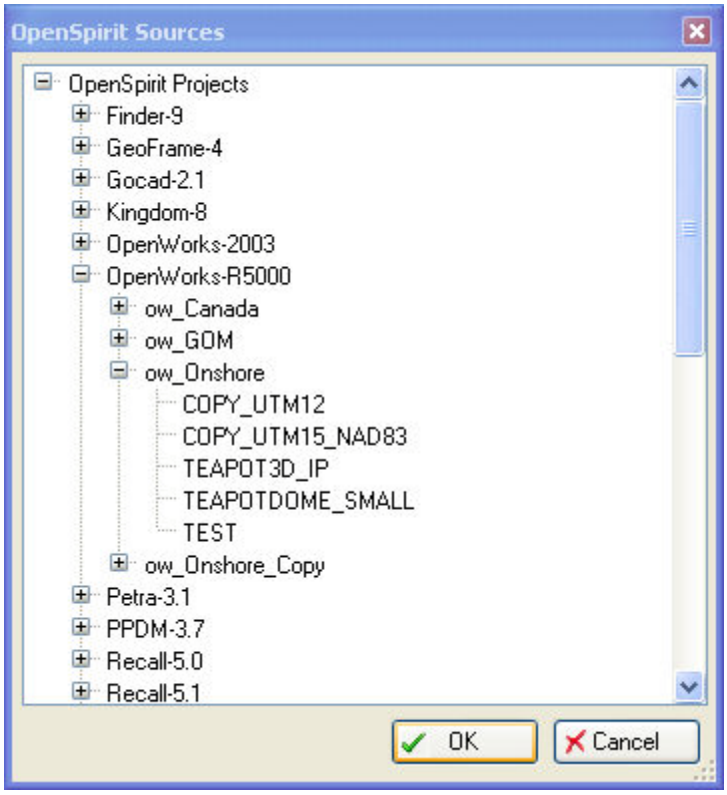


Select from external OpenSpirit data source...

In this option you select an existing external project (e.g. an OpenWorks , GeoFrame, Kingdom, etc... project) and then OpenSpirit will connect to this project and read its *CRS* details.. This *CRS* will then be used as the Petrel project *CRS*. This option allows you to use any standard predefined or custom *CRS* that may be defined in the external project.

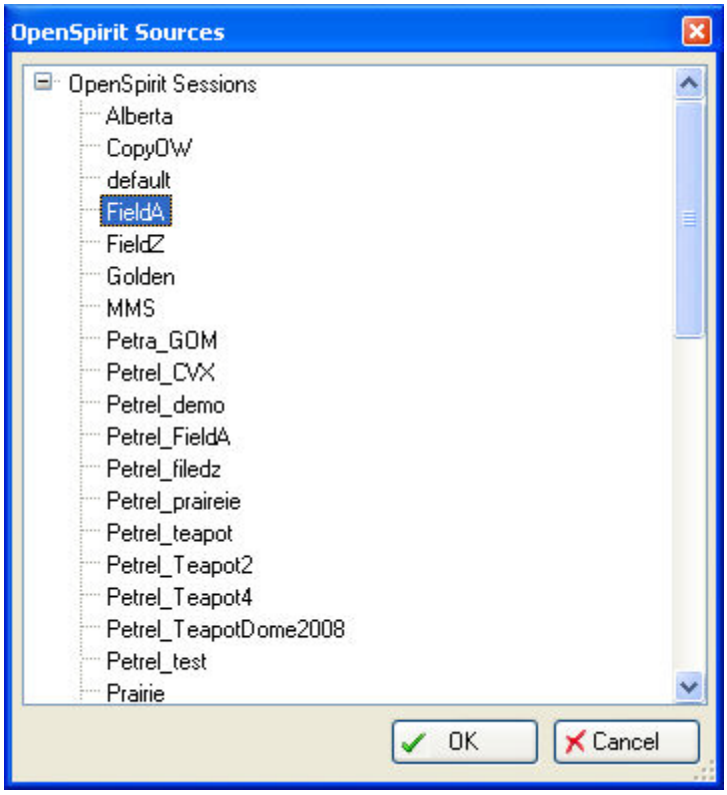
Notes:

1. Petrel requires a *CRS* that is a map projection system. Some external data stores may allow a user to set a project *CRS* as a geographic system- these projects can not be used to define the Petrel project *CRS*.
2. In addition, when an external project is chosen to define the Petrel project *CRS* the preferred *datum shift* to WGS84 that is defined in the chosen project will also be set as the preferred *datum shift* to WGS84 in Petrel. This *datum shift* will then be used by the *application adapter* when exchanging data between a Petrel project and an external data store if they have differing geodetic datums.



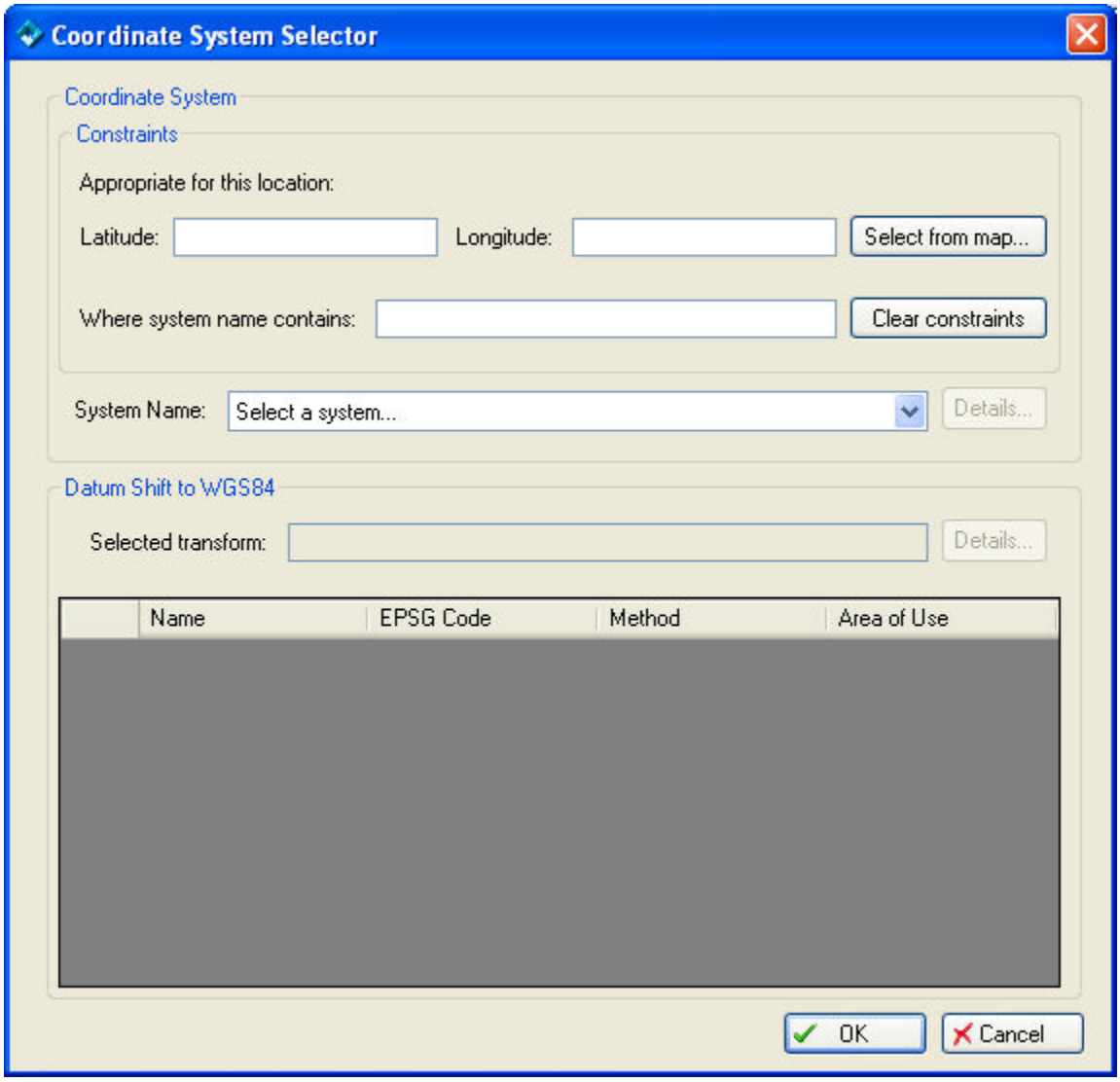
Select from existing OpenSpirit Session...

In this option you select an existing OpenSpirit session that has a preferred *CRS* already set on it. The OpenSpirit Session *CRS* is, in turn, obtained from a selected external project (e.g. OpenWorks, GeoFrame , Kingdom , etc...) that was chosen in the OpenSpirit session wizard.



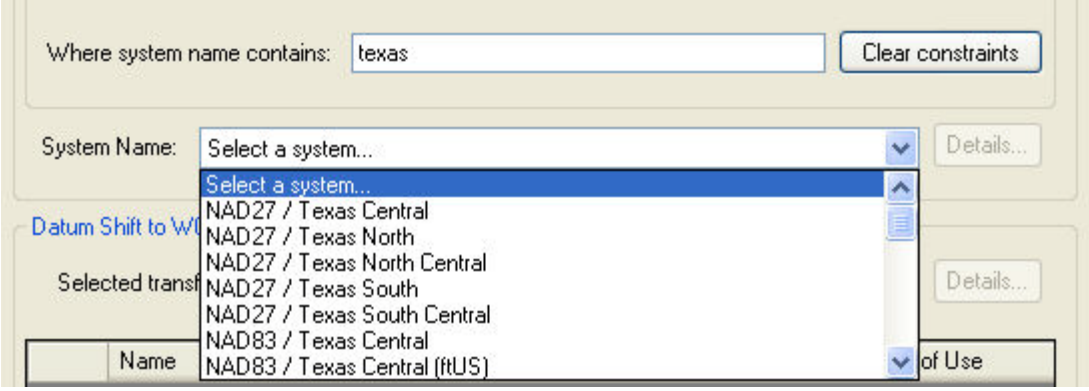
Select from OpenSpirit EPSG list...

In this option you select a predefined EPSG *CRS* from the OpenSpirit catalog that is referenced by your OpenSpirit installation.

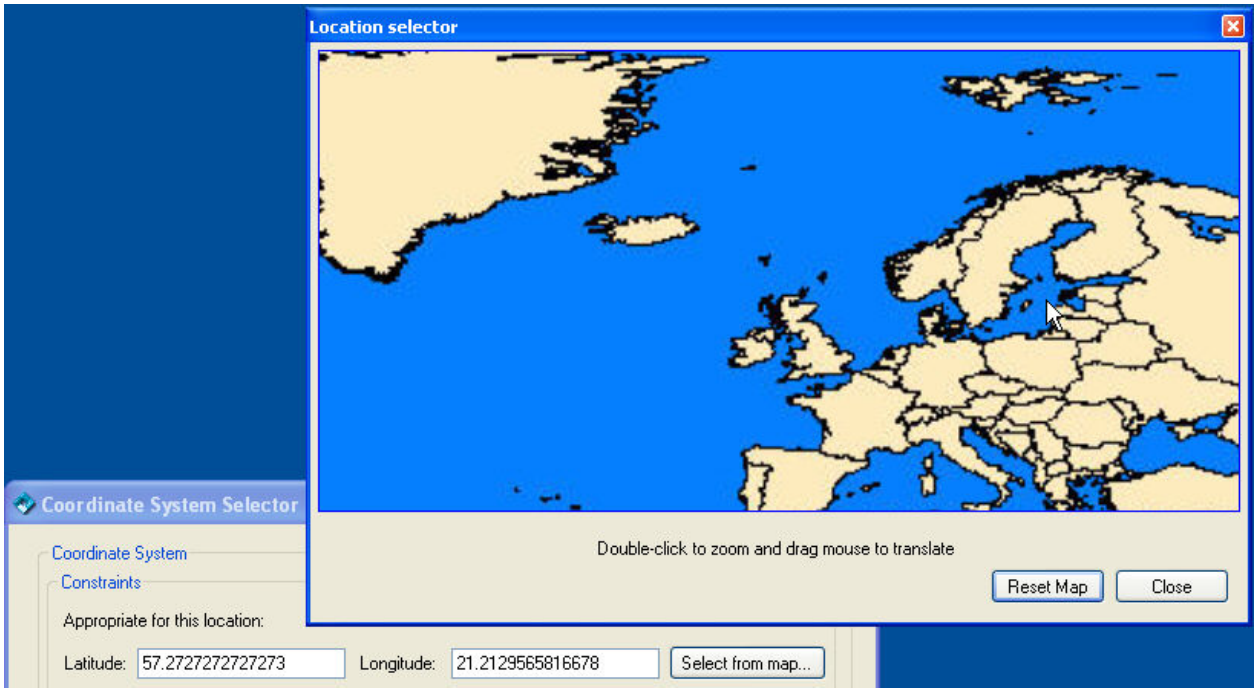


To select a *CRS* and an associated preferred *datum shift* you should follow these steps.

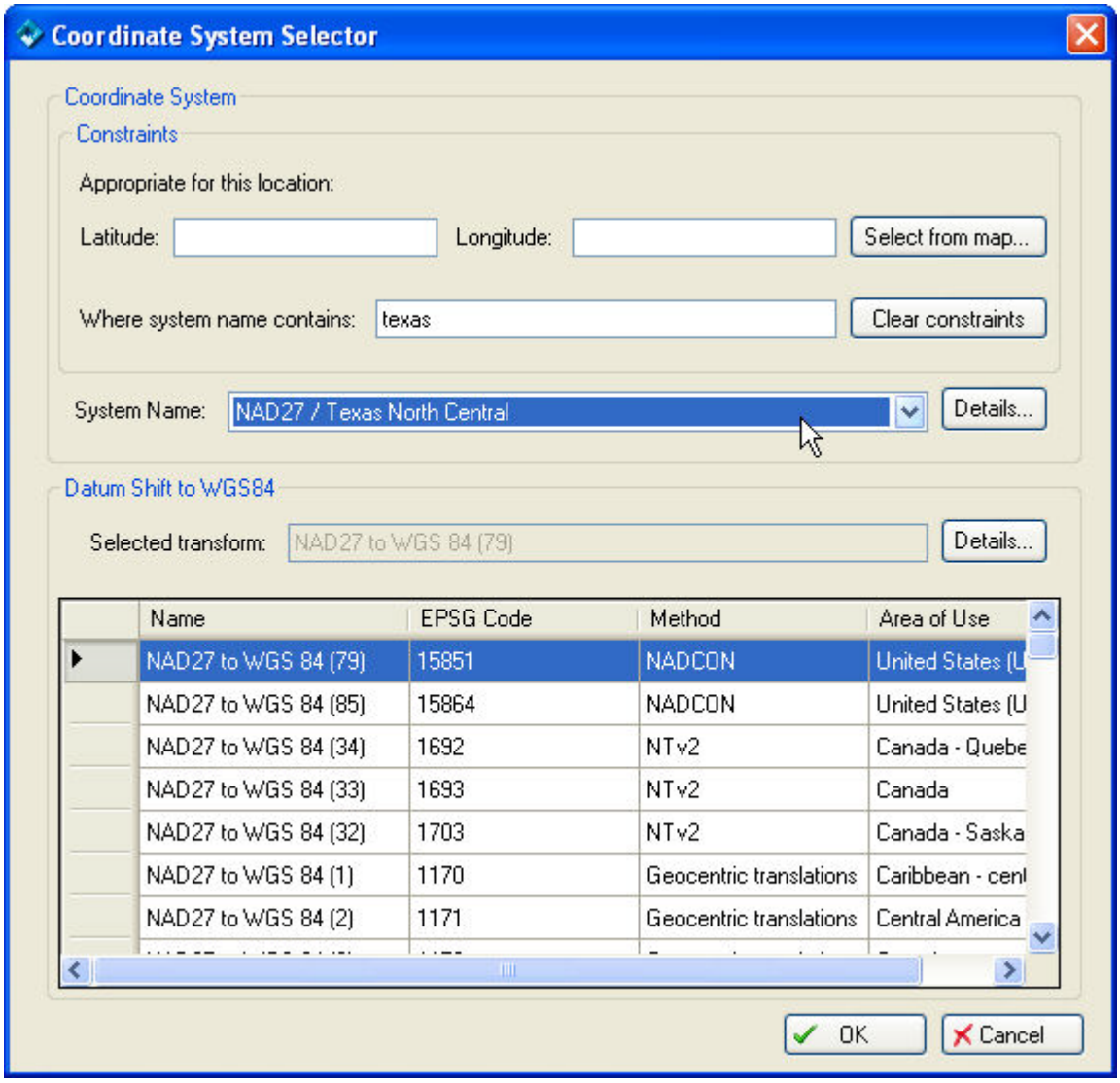
1. Optionally filter the list of available *CRS* names by entering a text fragment (case insensitive)



2. Optionally filter the list of available *CRS* names by entering a location by either typing in a latitude/longitude or selecting a point on the index map. Then only those map projection systems that are valid at this point on the globe (based on the area of applicability in the EPSG catalog) will be available for selection.



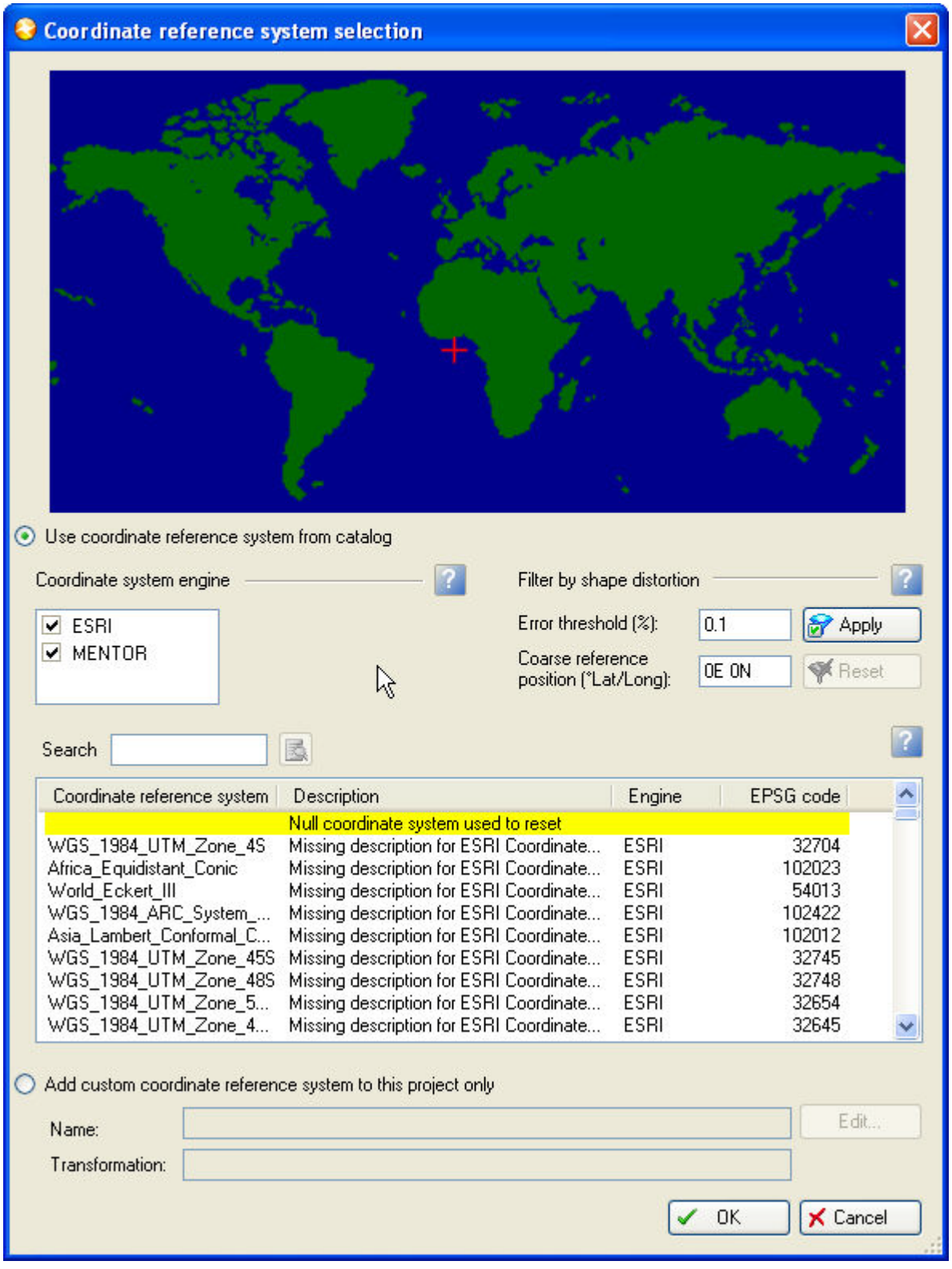
3. Select a System name from the drop down list. You may optionally inspect all its details (e.g. its EPSG parameters names and values) to help confirm your choice.



4. Then if the chosen *CRS* has a datum other than WGS84 you will be presented a list of datum shifts. You should choose one. Again, you may inspect its details to help select one. Many users may find it helpful to consult a data manager, GIS specialist, or geodesist within their company who may be more familiar with selecting an appropriate *CRS* and *datum shift* for your area of interest.

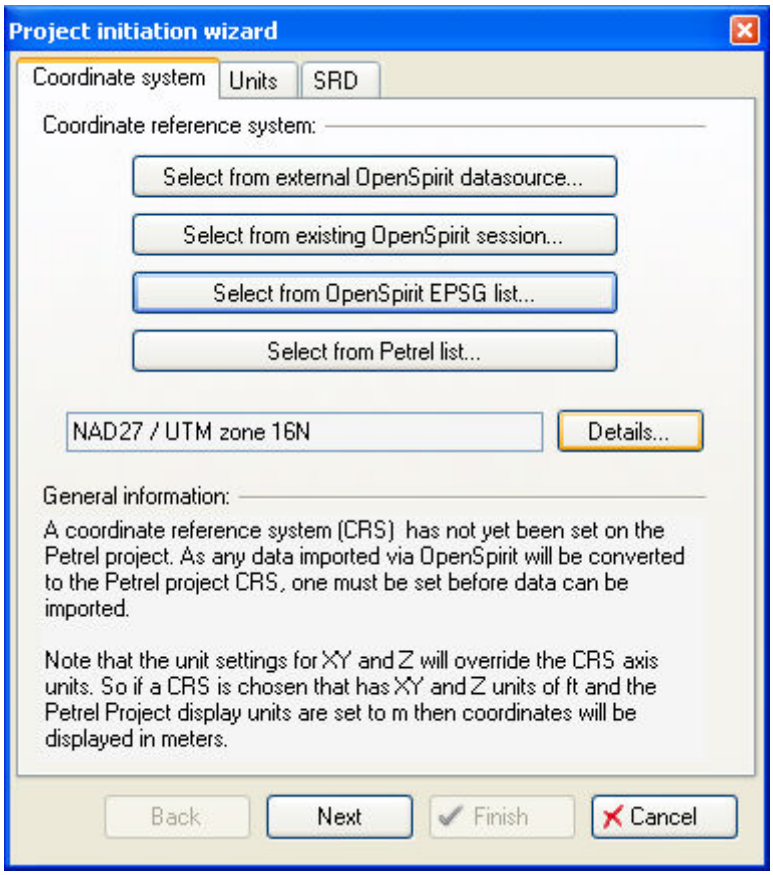
Select from Petrel list...

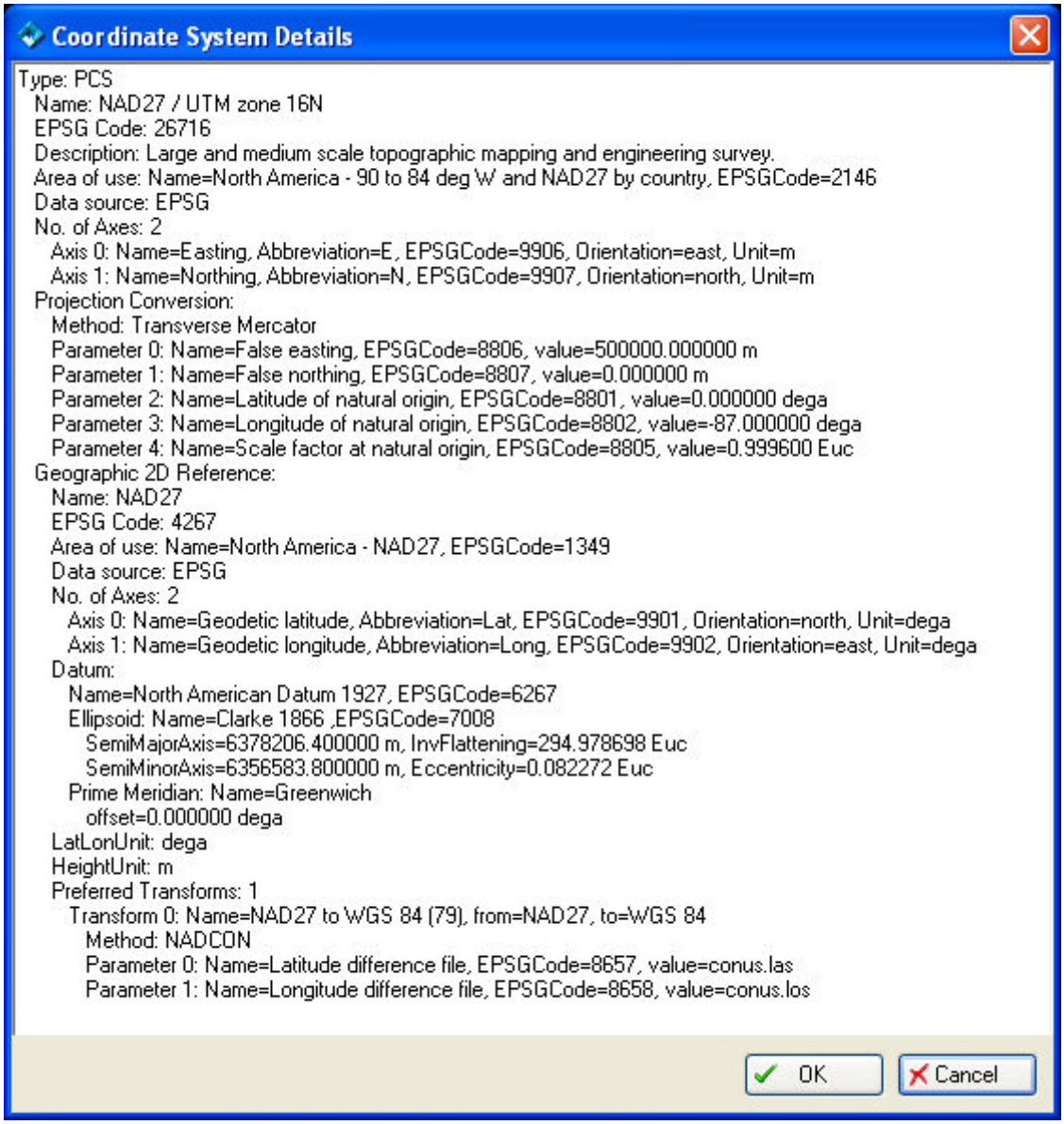
This option brings up the normal Petrel coordinate system selection dialog. Choose a *CRS* from this list.



Confirming CRS Choice

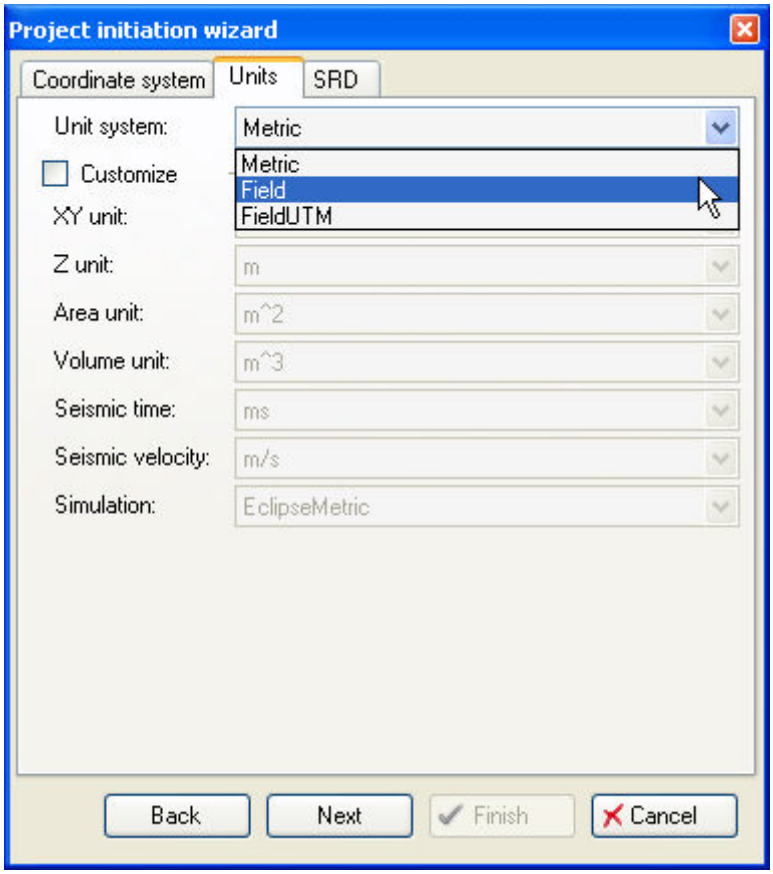
Regardless of which method was used to select a *CRS* you will see the choice reflected in the Project initiation wizard and have one last chance to inspect its details before advancing to the next step in the wizard by clicking the Next button.



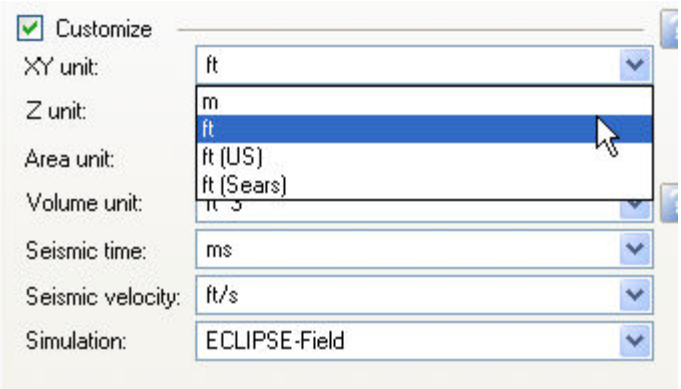


Setting the Project Units

The next step in initializing a project is to set the desired display units. This dialog mimics the Units dialog in the Petrel project setting dialog and provides a mechanism for the user to set their preferences at project creation time. If a Coordinate System was selected from either an OpenSpirit datasource or session, then the Units tab will be pre-populated with the project/session units. The pre-populated units may be overwritten by subsequently selecting a unit system in the Units tab.



If you select to customize the project unit system you may individually select the preferred units for different measurements and also have additional XY and Z units available.



Notes:

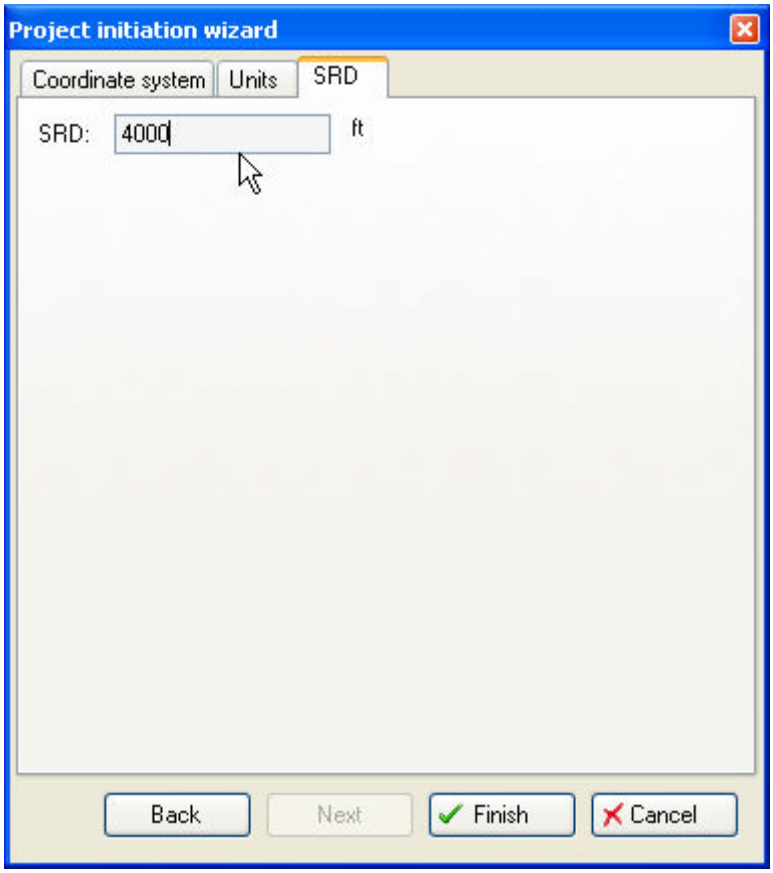
1. The choice of the XY units will override the units on the chosen *CRS*. So if a UTM *CRS* is chosen which has meters as its units for X and Y and a user chooses ft as the preferred XY unit then all locations in Petrel will be shown in the chosen UTM *CRS* but the X, Y values will be converted to feet.
2. The OpenSpirit Ocean Petrel *Application Adapter* distinguishes between three types of feet:

- ft = International foot
- ft(US) = US survey foot - commonly used in the USA for State Plane systems
- ft(Sears) = Sears foot - used for a *CRS* commonly used in Sarawak, Malaysia

After choosing your unit preferences advance to the next tab in the wizard by clicking on the Next button.

Setting the Project SRD (Seismic Reference Datum)

The last step to initialize the project is to define the *SRD* (Seismic Reference Datum). This is the elevation (with respect to mean sea level) at which the seismic travel time is zero. This must be set before any data is imported or exported via OpenSpirit as this is taken into account when seismic data or checkshots are transferred.



After completing all three steps of the project initiation wizard click on the Finish button and you will be prompted for a Petrel project name and path and a new empty Petrel project will be created with the desired preferences.

If the OpenSpirit settings option is enabled to "Start data selector when I click finish" then the OpenSpirit Data Selector will be launched. The Data Selector may then be used to select the desired projects and selected wells, seismic, interpretation and culture data.

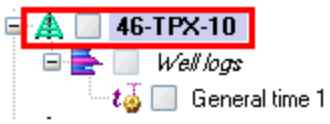
Import Data

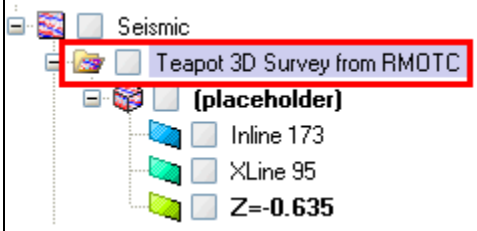
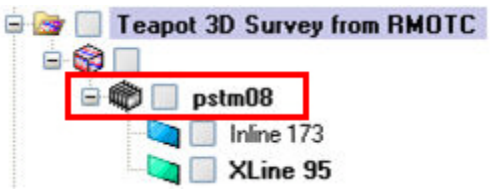
Import Overview

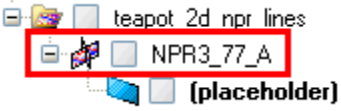
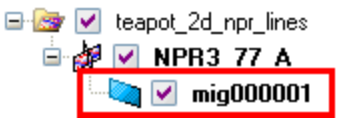
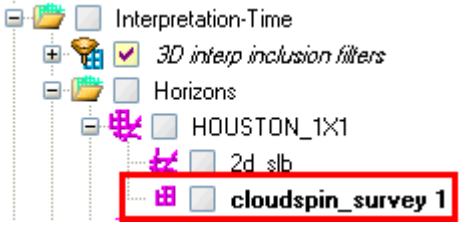
Data may be imported into Petrel via OpenSpirit by several mechanisms:

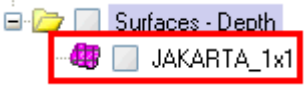
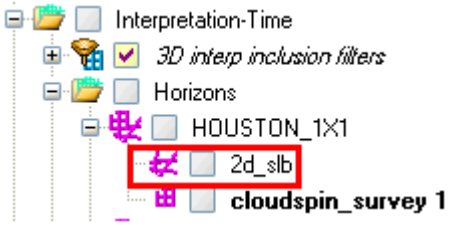
Data imported from external data store

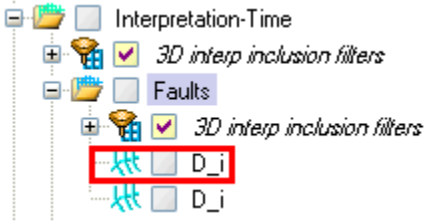
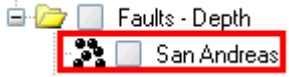
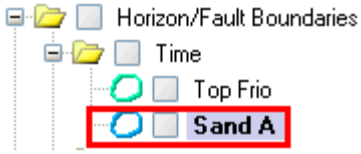
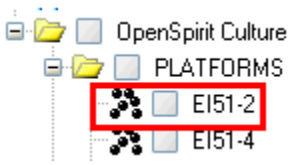
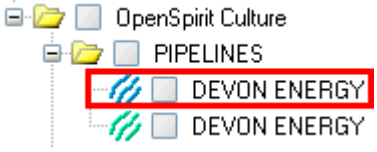
- Data may be imported in reaction to a received *data selection event*. This may be initiated from the OpenSpirit Data Selector, OpenSpirit ArcGIS Extension, OpenSpirit viewers, or other third party OpenSpirit enabled applications.
- Data may be imported in reaction to a drag and drop event (containing a *data selection event*). This may be initiated from the OpenSpirit Data Selector or other third party OpenSpirit enabled applications.

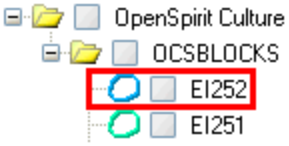
OpenSpirit Data Selector Tab Name	Screen shot from Petrel Input Tree	Petrel Object Type Created	Comments
Well Bore		Well	When a wellbore selection is received a Petrel well is created and if the source wellbore has a preferred checkshot this is also imported and set as the active checkshot on the Petrel well (and a General time log created). Wellbores that are missing a well reference datum (e.g. a KB elevation) are not imported and wellbores missing an azimuth north reference are also skipped (unless you have set a default north reference in the OpenSpirit settings dialog). Skipped data is noted in the log file.
Well Pick		Well Tops	When well pick selections are received a new entry is made in the stratigraphy folder for every unique well pick name and pick values added for each well pick. If there is no "Well Tops -

			1" folder one is created.
Well Log		Well Log	The OpenSpirit log kind is used to find the corresponding Petrel log template and an entry made in the Global logs section. If multiple versions of the same log kind are added to the same well, a number is appended to the log kind name to distinguish them.
Well Velocity		Checkshot	The preferred checkshot is automatically imported when a well is created via OpenSpirit. You may also send additional checkshots. A user must then select which to use as the active checkshot. If the checkshot datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the checkshot times) or to skip importing the checkshot.
3D Survey		Survey	If a 3d survey event is received a Survey Folder is created and a dummy 3d seismic volume placed in it (called "(placeholder)" - this is required because a 3d survey may not be created in Petrel without an associated seismic volume). A Survey folder is automatically created, if needed, when a 3d volume is received.
3D Volume		3D seismic	A "dummy" unlabeled cube is made and a virtual attribute cube is placed under it which is a "live-link" to the remote seismic volume. A zgy file may then be created by realizing the volume

			or a subset of it. If a seismic time volume's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the start time) or to skip importing the volume.
2D Survey		Survey	If a 2d survey event is received a Survey Folder is created. A Survey folder is also automatically created, if needed, when a 2D line or 2D Dataset is received.
2D Line		2d seismic	If a 2d line event is received a 2d Line Folder is created (if needed) and a dummy 2d seismic line placed in it (called "(placeholder)" - this is required because a 2d line may not be created in Petrel without an associated seismic dataset). A Line folder is also created, if needed, when a 2d dataset is received.
2D Dataset		2d seismic	If a seismic time dataset's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the start time) or to skip importing the dataset.
Horizon (type= Grid2d with an association to a 3d survey - origin= "3d survey"- a seismic horizon)		3D Interpretation grid	If a horizon selection from a 3d survey is received then a 3d interpretation grid is made and placed under the corresponding Petrel seismic horizon name (which is created if it doesn't already exist). The 3d interpretation grid is named after its 3d

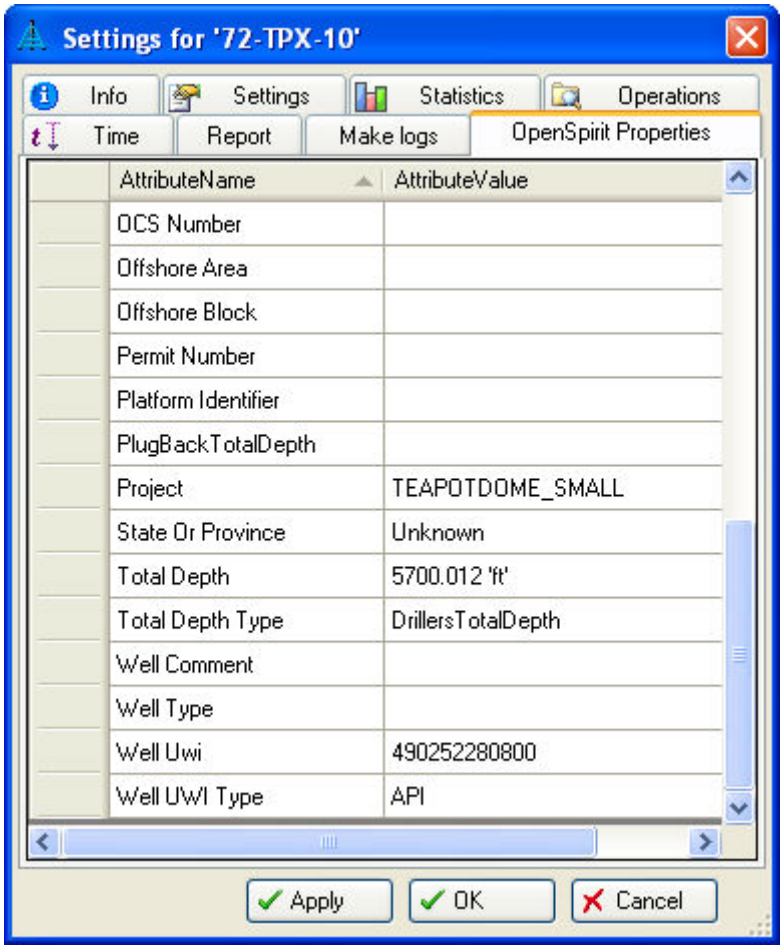
			survey. Only the elevation property is initially brought in (either time or depth based on the horizon's domain) . If a seismic time horizon's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the times) or to skip importing the horizon.
Horizon (type= Grid2d with Origin="2d grid" - a non-seismic horizon grid)		Surface	When a non-seismic horizon selection is received a Petrel surface will be created. If the grid is not rectangular (in the Petrel project *CRS*) it will not be imported
Horizon (type= Grid1dSet - 2d seismic horizon)		2D Interpretation	When a horizon selection from a 2d seismic interpretation is received a 2d interpretation is made and placed under the corresponding Petrel seismic horizon name (which is created if it doesn't already exist). The 2d interpretation is named after its 2d survey. If a seismic time horizon's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the times) or to skip importing the horizon.
Horizon (type = PointSet)		Points	Received horizon PointSets are placed in a folder named "Surfaces - Time" or "Surfaces-Depth"- based on domain.

Horizon Properties		Continuous attribute	When a horizon property event is received and there is no corresponding 3D interpretation grid already in Petrel then the 3d interpretation grid will automatically be created so that the property may be attached to it.
Fault (type= PolylineSet)		Fault interpretation	
Fault (type= PointSet)		Points	Received fault PointSets are placed in a folder named "Faults -Time" or "Faults-Depth"- based on domain.
Horizon Fault Boundaries		Lines/polygons	
Point Feature (e.g. from SDE)		Points	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Point Feature attributes with Point features
Polyline Feature (e.g. from SDE)		Lines/polygons	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Polyline Feature attributes with Polyline features

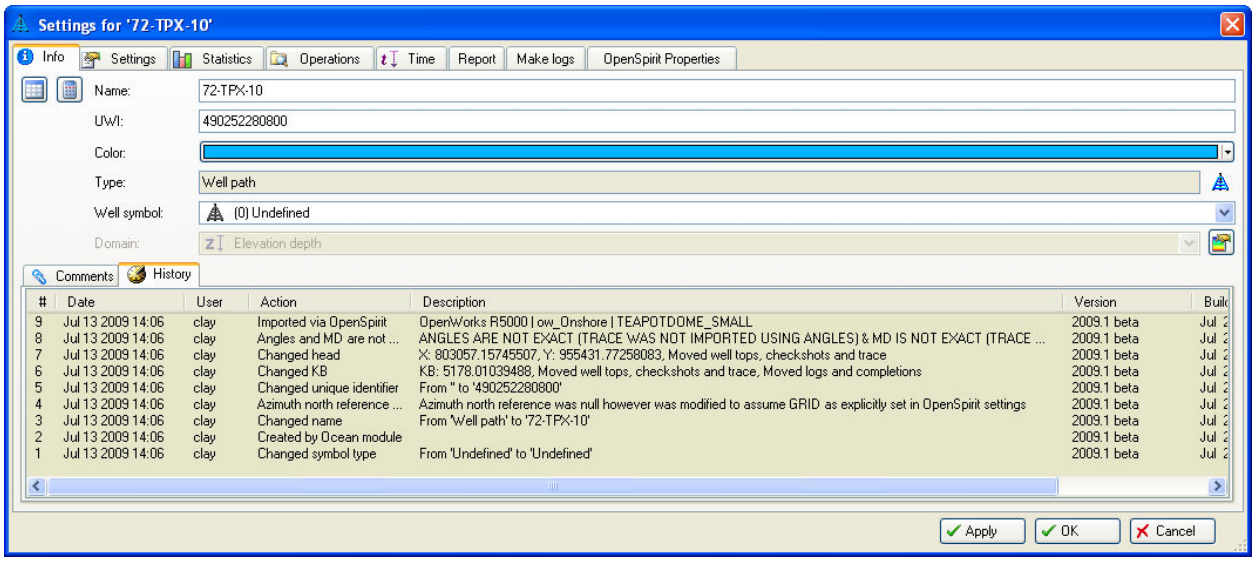
Polygon Feature (e.g. from SDE)		Lines/polygons	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Polygon Feature attributes with Polygon features

In either case the OpenSpirit adapter will use the received *datakeys* to query for data from the referenced data stores and then compare to data already in the Petrel project. If matching data exists in the project you will have a chance to indicate whether you wish to skip importing the matching data item, update it, or add a duplicate item. This import behavior is controlled in the import dialog. The attributes used to determine a match are set in the configuration file.

If data is imported via this mechanism the Petrel objects that are created are "tagged" with the OpenSpirit datakey and the last modified date from the source data store. This will allow synchronization with the external data source. In addition, based on settings in the configuration file, additional attributes, beyond what is mappable to the Petrel data model, will be added to the Petrel object. These extended attributes may be viewed in the Settings dialog of any imported object in the OpenSpirit Properties tab (as illustrated below).



When data is imported entries are made in the Petrel object history to document from where the data was imported and what assumptions may have been made during import (see example below).



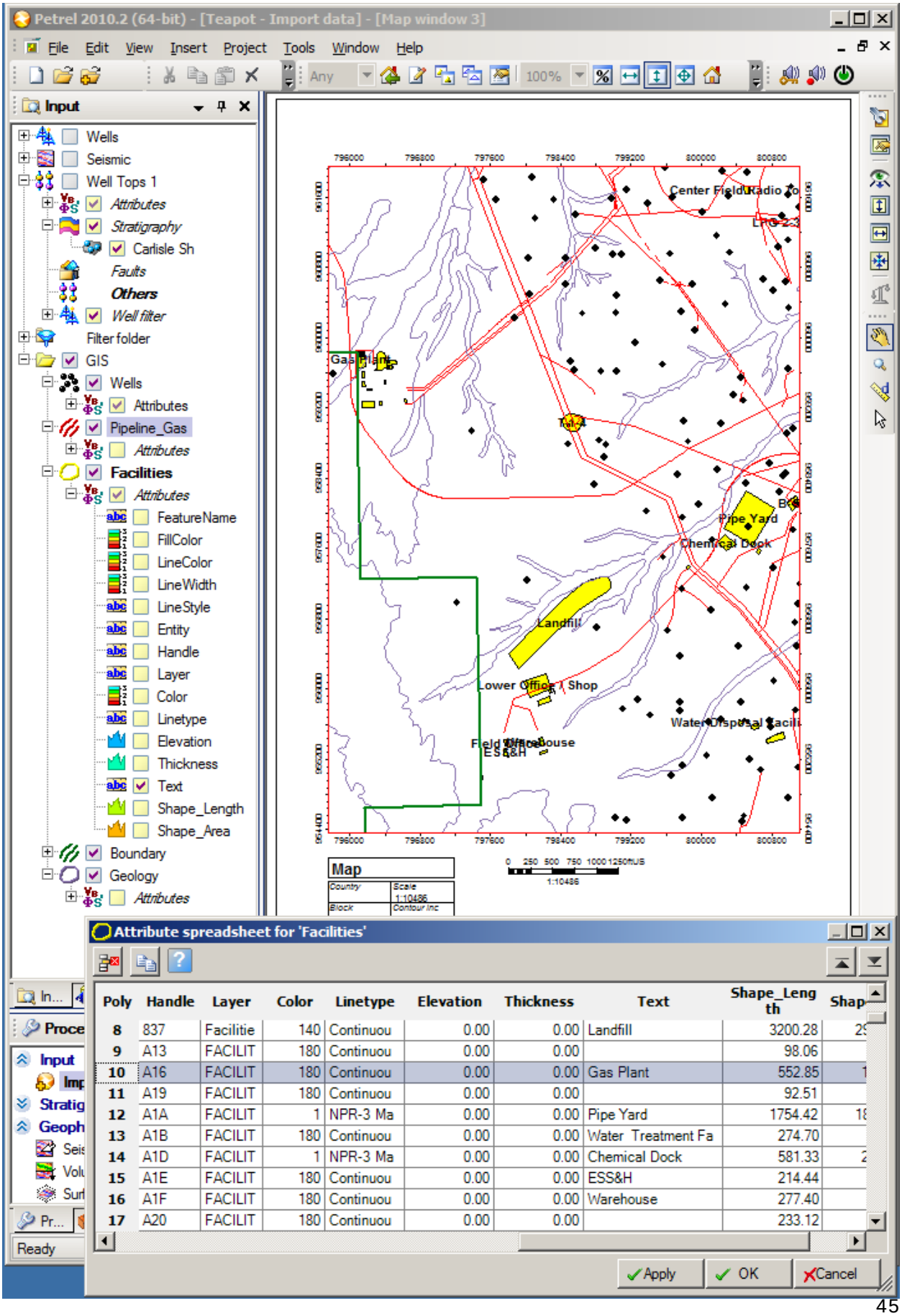
Data imported from another application sending a data full event

- Data may be imported in reaction to a received GIS or *Grid event*. This may be initiated from the OpenSpirit ArcGIS Extension or other third party OpenSpirit enabled applications.

Do to changes in Petrel functionality between Petrel 2009.2 and Petrel 2010.x the treatment of received GIS events varies. This table shows the correspondence between data displayed in ArcGIS and how it will appear in Petrel if sent as a GIS event.

ArcGIS	Petrel 2009.2	Petrel 2010.x
A feature class (e.g. Cities)	A folder of the same name	A Petrel object (either a point or polyline/polgon object based on feature class geometry type) of the same name
An individual feature (e.g. Paris, London, New York)	A Petrel object (either a point or polyline/polgon object based on feature class geometry type) whose name is taken from the primary display field.	A Petrel object belonging to the parent Petrel object.
Fields on a feature (e.g. population, area, rank, etc...)	Transferred as OpenSpirit properties that are visible in the settings dialog. These properties are not available for other purposes.*	Transferred as Petrel attributes that may be posted on a map and used to control the Petrel object display properties.*

(An example of received GIS features in Petrel 2010.2)



Poly	Handle	Layer	Color	Linetype	Elevation	Thickness	Text	Shape_Length	Shap
8	837	Facilitie	140	Continuou	0.00	0.00	Landfill	3200.28	2
9	A13	FACILIT	180	Continuou	0.00	0.00		98.06	
10	A16	FACILIT	180	Continuou	0.00	0.00	Gas Plant	552.85	1
11	A19	FACILIT	180	Continuou	0.00	0.00		92.51	
12	A1A	FACILIT	1	NPR-3 Ma	0.00	0.00	Pipe Yard	1754.42	1
13	A1B	FACILIT	180	Continuou	0.00	0.00	Water Treatment Fa	274.70	
14	A1D	FACILIT	1	NPR-3 Ma	0.00	0.00	Chemical Dock	581.33	2
15	A1E	FACILIT	180	Continuou	0.00	0.00	ESS&H	214.44	
16	A1F	FACILIT	180	Continuou	0.00	0.00	Warehouse	277.40	
17	A20	FACILIT	180	Continuou	0.00	0.00		233.12	

A received grid event (as may be sent from a selected raster feature in ArcGIS) creates a corresponding Petrel surface.

Received GIS and Grid events contains the data itself and no query is made to a data store. No datakey is stored with the Petrel object that is made in response to a GIS or *grid event*. When these events are received they are converted to the Petrel project CRS.

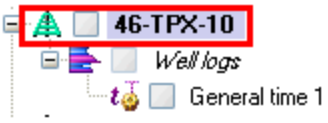
**** The transfer of the feature field values in a GIS event from ArcGIS requires use of the OpenSpirit ArcGIS Extension 2010. Earlier versions of the ArcGIS Extension only include the feature name and geometry.***

Import Overview

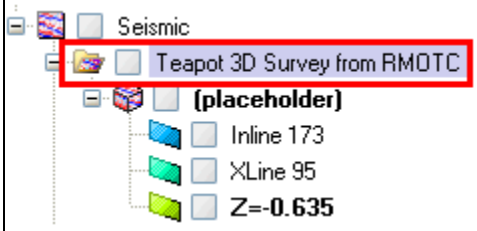
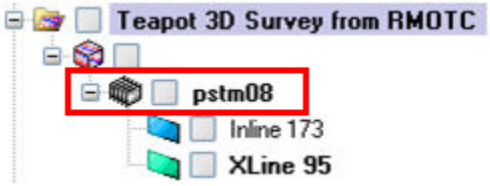
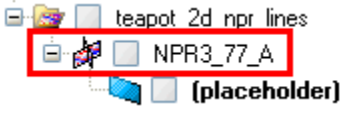
Data may be imported into Petrel via OpenSpirit by several mechanisms:

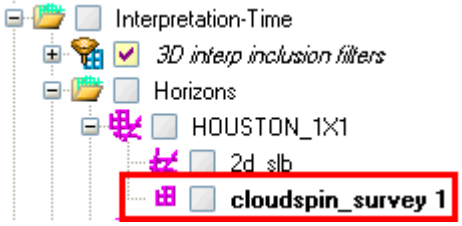
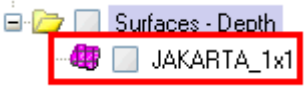
Data imported from external data store

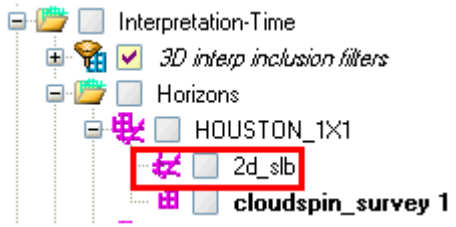
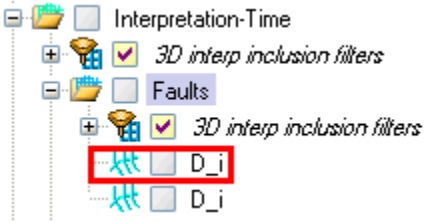
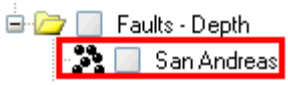
- Data may be imported in reaction to a received *data selection event*. This may be initiated from the OpenSpirit Data Selector, OpenSpirit ArcGIS Extension, OpenSpirit viewers, or other third party OpenSpirit enabled applications.
- Data may be imported in reaction to a drag and drop event (containing a *data selection event*). This may be initiated from the OpenSpirit Data Selector or other third party OpenSpirit enabled applications.

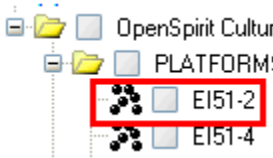
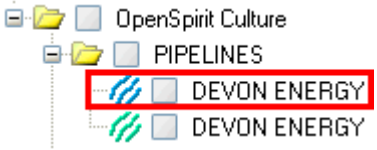
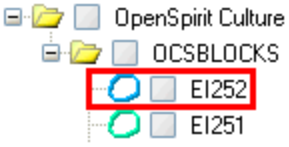
OpenSpirit Data Selector Tab Name	Screen shot from Petrel Input Tree	Petrel Object Type Created	Comments
Well Bore		Well	When a wellbore selection is received a Petrel well is created and if the source wellbore has a preferred checkshot this is also imported and set as the active checkshot on the Petrel well (and a General time log created). Wellbores that are missing a well reference datum (e.g. a KB elevation) are not imported and wellbores

			missing an azimuth north reference are also skipped (unless you have set a default north reference in the OpenSpirit settings dialog). Skipped data is noted in the log file.
Well Pick		Well Tops	When well pick selections are received a new entry is made in the stratigraphy folder for every unique well pick name and pick values added for each well pick. If there is no "Well Tops - 1" folder one is created.
Well Log		Well Log	The OpenSpirit log kind is used to find the corresponding Petrel log template and an entry made in the Global logs section. If multiple versions of the same log kind are added to the same well, a number is appended to the log kind name to distinguish them.
Well Velocity		Checkshot	The preferred checkshot is automatically imported when a well is created via OpenSpirit. You may also send additional checkshots. A user must then select which to use as the active checkshot. If the checkshot datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the checkshot times) or to skip importing the checkshot.

3D Survey		Survey	If a 3d survey event is received a Survey Folder is created and a dummy 3d seismic volume placed in it (called "(placeholder)" - this is required because a 3d survey may not be created in Petrel without an associated seismic volume). A Survey folder is automatically created, if needed, when a 3d volume is received.
3D Volume		3D seismic	A "dummy" unlabeled cube is made and a virtual attribute cube is placed under it which is a "live-link" to the remote seismic volume. A zgy file may then be created by realizing the volume or a subset of it. If a seismic time volume's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the start time) or to skip importing the volume.
2D Survey		Survey	If a 2d survey event is received a Survey Folder is created. A Survey folder is also automatically created, if needed, when a 2D line or 2D Dataset is received.
2D Line		2d seismic	If a 2d line event is received a 2d Line Folder is created (if needed) and a dummy 2d seismic line placed in it (called "(placeholder)" - this is required because a 2d line may not be created in Petrel without an associated seismic dataset). A Line folder is also created, if needed,

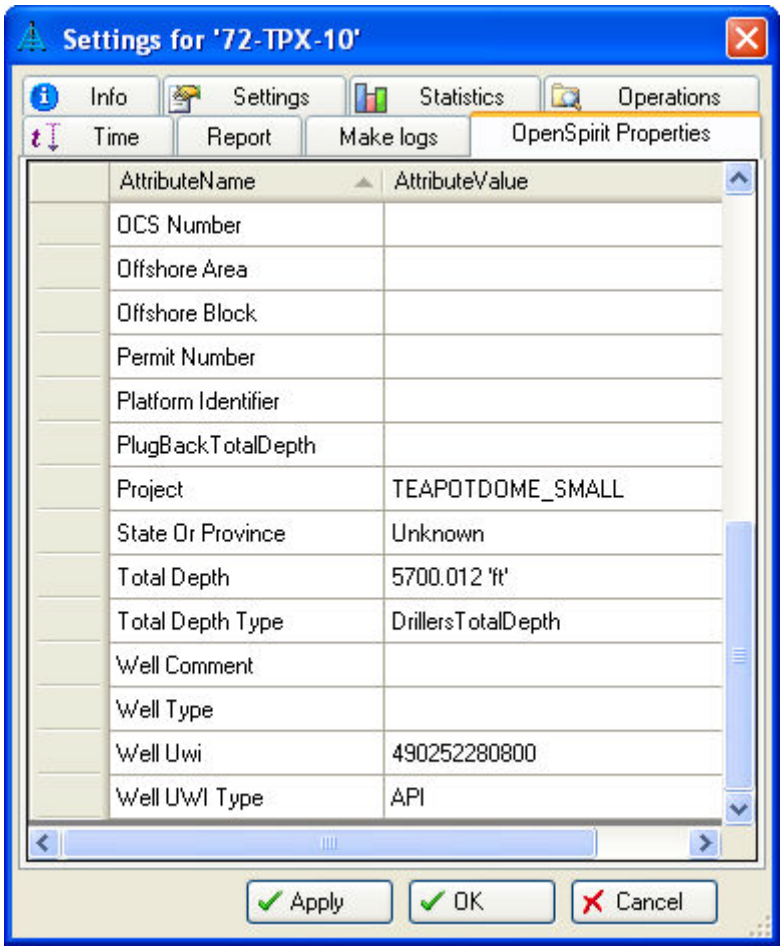
			when a 2d dataset is received.
2D Dataset		2d seismic	If a seismic time dataset's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the start time) or to skip importing the dataset.
Horizon (type= Grid2d with an association to a 3d survey - origin= "3d survey"- a seismic horizon)		3D Interpretation grid	If a horizon selection from a 3d survey is received then a 3d interpretation grid is made and placed under the corresponding Petrel seismic horizon name (which is created if it doesn't already exist). The 3d interpretation grid is named after its 3d survey. Only the elevation property is initially brought in (either time or depth based on the horizon's domain) . If a seismic time horizon's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the times) or to skip importing the horizon.
Horizon (type= Grid2d with Origin="2d grid" - a non-seismic horizon grid)		Surface	When a non-seismic horizon selection is received a Petrel surface will be created. If the grid is not rectangular (in the Petrel project *CRS*) it will not be imported

Horizon (type= Grid1dSet - 2d seismic horizon)		2D Interpretation	When a horizon selection from a 2d seismic interpretation is received a 2d interpretation is made and placed under the corresponding Petrel seismic horizon name (which is created if it doesn't already exist). The 2d interpretation is named after its 2d survey. If a seismic time horizon's datum differs from the Petrel *SRD* then you are prompted to either supply a replacement velocity (to be used to shift the times) or to skip importing the horizon.
Horizon (type = PointSet)		Points	Received horizon PointSets are placed in a folder named "Surfaces - Time" or "Surfaces-Depth"- based on domain.
Horizon Properties		Continuous attribute	When a horizon property event is received and there is no corresponding 3D interpretation grid already in Petrel then the 3d interpretation grid will automatically be created so that the property may be attached to it.
Fault (type= PolylineSet)		Fault interpretation	
Fault (type= PointSet)		Points	Received fault PointSets are placed in a folder named "Faults -Time" or "Faults-Depth"- based on domain.

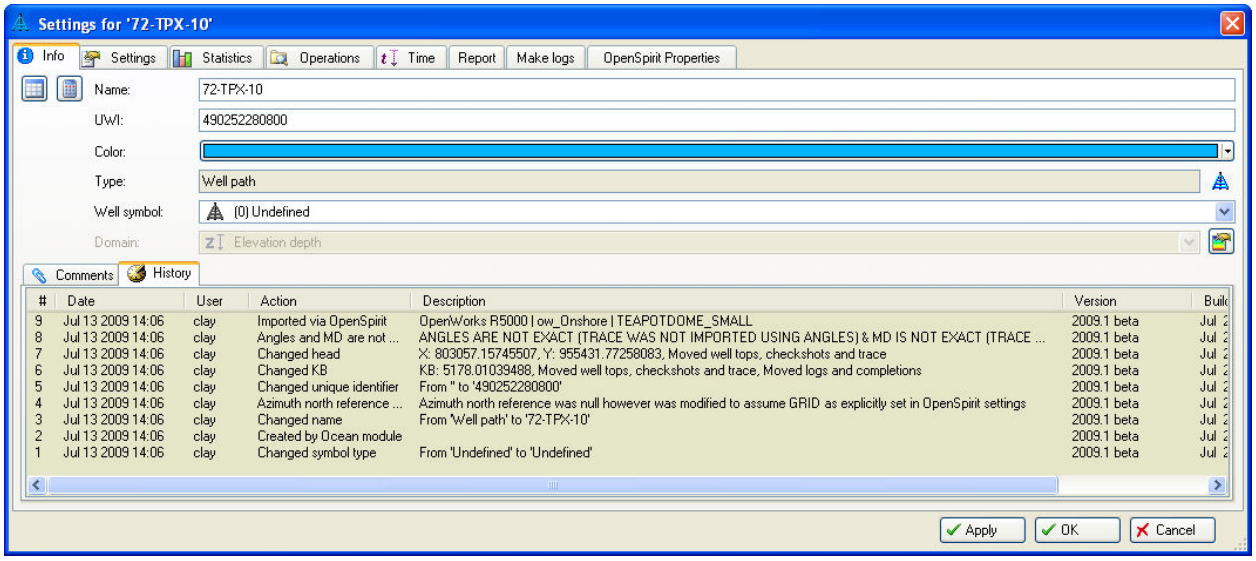
Horizon Fault Boundaries		Lines/polygons	
Point Feature (e.g. from SDE)		Points	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Point Feature attributes with Point features
Polyline Feature (e.g. from SDE)		Lines/polygons	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Polyline Feature attributes with Polyline features
Polygon Feature (e.g. from SDE)		Lines/polygons	Creates a feature whose name comes from the feature column that is called "name" or has "name" in it. If no such column exists the featureid is used as the Petrel object name. Automatically imports all associated Polygon Feature attributes with Polygon features

In either case the OpenSpirit adapter will use the received *datakeys* to query for data from the referenced data stores and then compare to data already in the Petrel project. If matching data exists in the project you will have a chance to indicate whether you wish to skip importing the matching data item, update it, or add a duplicate item. This import behavior is controlled in the import dialog. The attributes used to determine a match are set in the configuration file.

If data is imported via this mechanism the Petrel objects that are created are "tagged" with the OpenSpirit datakey and the last modified date from the source data store. This will allow synchronization with the external data source. In addition, based on settings in the configuration file, additional attributes, beyond what is mappable to the Petrel data model, will be added to the Petrel object. These extended attributes may be viewed in the Settings dialog of any imported object in the OpenSpirit Properties tab (as illustrated below).



When data is imported entries are made in the Petrel object history to document from where the data was imported and what assumptions may have been made during import (see example below).



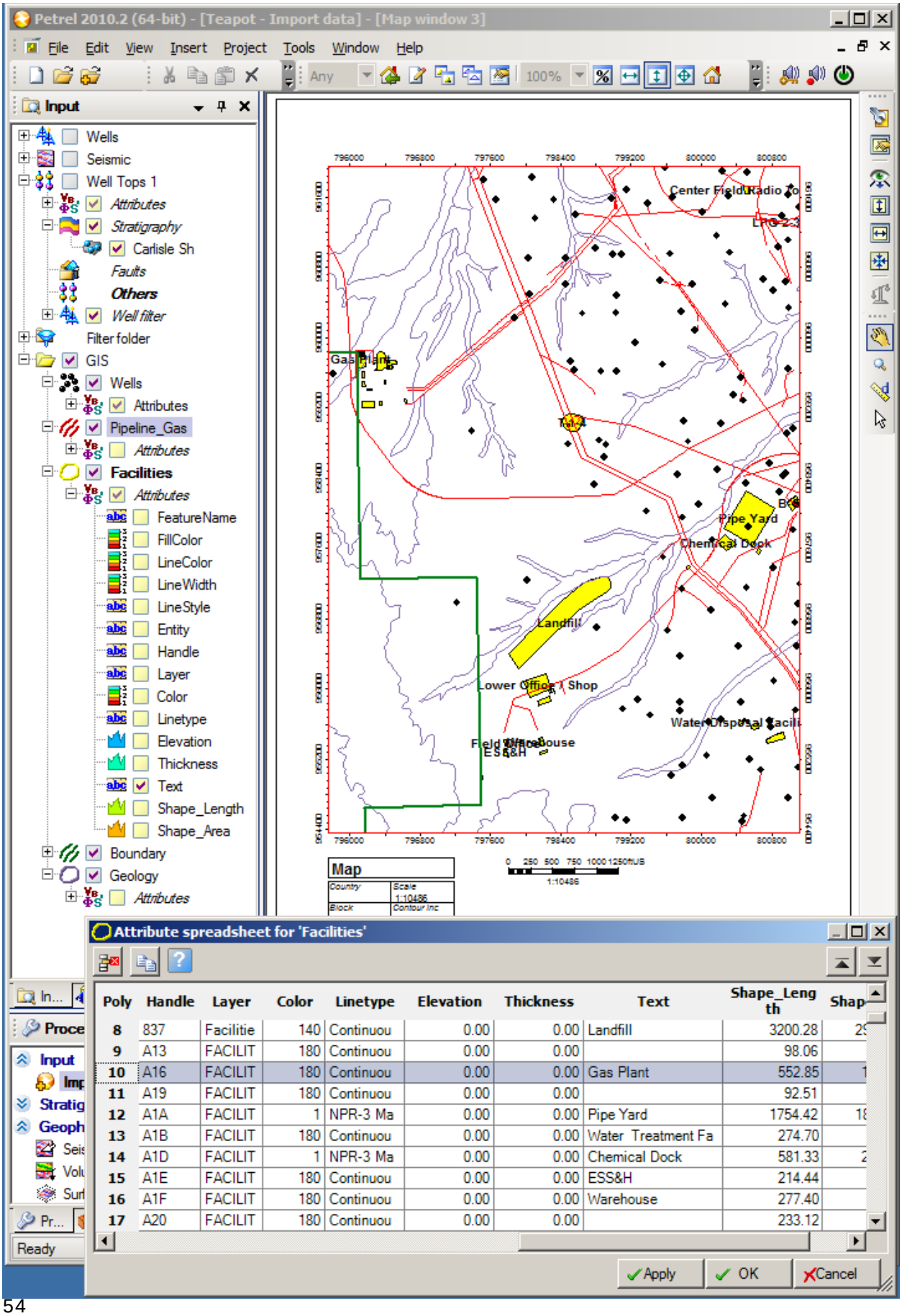
Data imported from another application sending a data full event

- Data may be imported in reaction to a received GIS or *Grid event*. This may be initiated from the OpenSpirit ArcGIS Extension or other third party OpenSpirit enabled applications.

Do to changes in Petrel functionality between Petrel 2009.2 and Petrel 2010.x the treatment of received GIS events varies. This table shows the correspondence between data displayed in ArcGIS and how it will appear in Petrel if sent as a GIS event.

ArcGIS	Petrel 2009.2	Petrel 2010.x
A feature class (e.g. Cities)	A folder of the same name	A Petrel object (either a point or polyline/polgon object based on feature class geometry type) of the same name
An individual feature (e.g. Paris, London, New York)	A Petrel object (either a point or polyline/polgon object based on feature class geometry type) whose name is taken from the primary display field.	A Petrel object belonging to the parent Petrel object.
Fields on a feature (e.g. population, area, rank, etc...)	Transferred as OpenSpirit properties that are visible in the settings dialog. These properties are not available for other purposes.*	Transferred as Petrel attributes that may be posted on a map and used to control the Petrel object display properties.*

(An example of received GIS features in Petrel 2010.2)


Petrel 2010.2 (64-bit) - [Teapot - Import data] - [Map window 3]
File Edit View Insert Project Tools Window Help
Input
Wells
Seismic
Well Tops 1
Attributes
Stratigraphy
Carlisle Sh
Faults
Others
Well filter
Filter folder
GIS
Wells
Attributes
Pipeline_Gas
Attributes
Facilities
Attributes
FeatureName
FillColor
LineColor
LineWidth
LineStyle
Entity
Handle
Layer
Color
Linetype
Elevation
Thickness
Text
Shape_Length
Shape_Area
Boundary
Geology
Attributes
Gas Plant
Tel-4
Pipe Yard
Chemical Dock
Landfill
Lower Office / Shop
Field Office
ESS&H
Map
Attribute spreadsheet for 'Facilities'
Poly Handle Layer Color Linetype Elevation Thickness Text Shape_Length
8 837 Facilitie 140 Continuou 0.00 0.00 Landfill 3200.28
9 A13 FACILIT 180 Continuou 0.00 0.00 98.06
10 A16 FACILIT 180 Continuou 0.00 0.00 Gas Plant 552.85
11 A19 FACILIT 180 Continuou 0.00 0.00 92.51
12 A1A FACILIT 1 NPR-3 Ma 0.00 0.00 Pipe Yard 1754.42
13 A1B FACILIT 180 Continuou 0.00 0.00 Water Treatment Fa 274.70
14 A1D FACILIT 1 NPR-3 Ma 0.00 0.00 Chemical Dock 581.33
15 A1E FACILIT 180 Continuou 0.00 0.00 ESS&H 214.44
16 A1F FACILIT 180 Continuou 0.00 0.00 Warehouse 277.40
17 A20 FACILIT 180 Continuou 0.00 0.00 233.12
Apply
OK
Cancel
Ready

A received grid event (as may be sent from a selected raster feature in ArcGIS) creates a corresponding Petrel surface.

Received GIS and Grid events contains the data itself and no query is made to a data store. No datakey is stored with the Petrel object that is made in response to a GIS or *grid event*. When these events are received they are converted to the Petrel project CRS.

**** The transfer of the feature field values in a GIS event from ArcGIS requires use of the OpenSpirit ArcGIS Extension 2010. Earlier versions of the ArcGIS Extension only include the feature name and geometry.***

Import Match and Merge

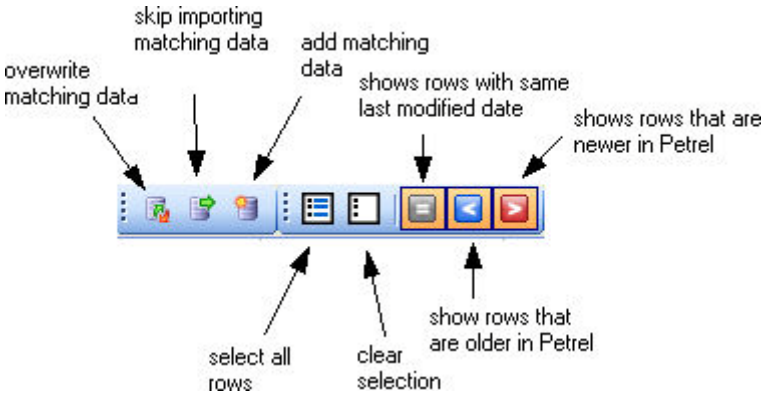
When data is imported into a Petrel project that already has some data in it the OpenSpirit adapter will try to see if there is matching data already in the project. If a data item that is to be imported matches data already in Petrel then you have a choice of whether you want to:

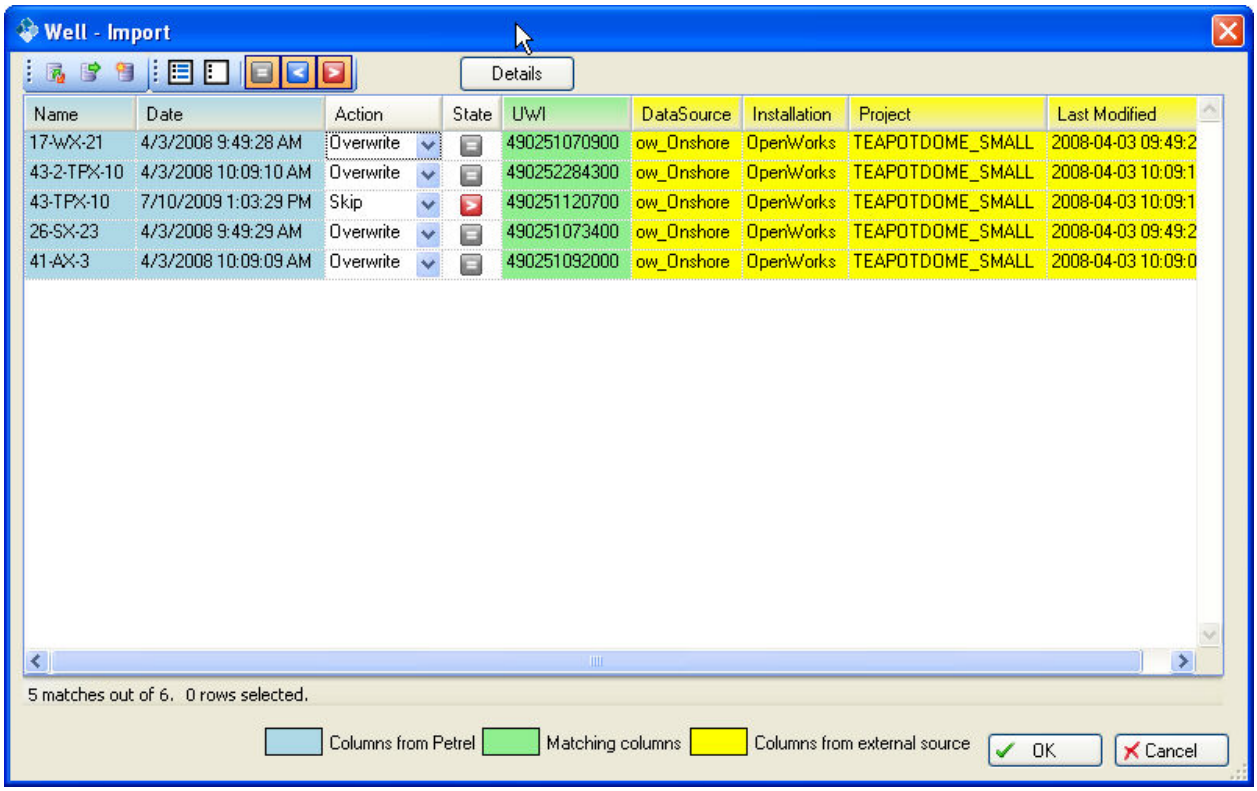
- Skip importing the data item
- Overwrite the existing data item
- Add the matching data item as a new object

To indicate what action to take for each matching item you may either set the desired action by selecting from the drop down list in the action column for the row of interest or you may highlight several rows and select the desired action by clicking on the corresponding toolbar icon (this is the easiest way to set an action for many rows).

To help you decide what to do the OpenSpirit adapter also allows you to filter the list of matching data by comparing the last modified time in Petrel to that in the external project- you may use the +, >, < tool bar buttons to control these listings. These are the same icons as used in the Petrel Reference Project Tool.

The attribute(s) that are used to determine a match are shown in the green column(s) and the choice of which attribute(s) to use are controlled by the OpenSpirit adapter configuration file.



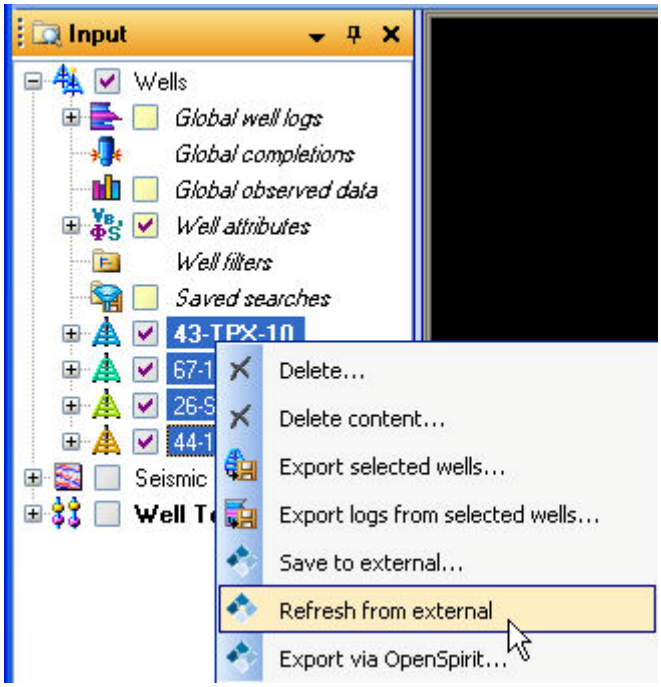


Clicking the "Details" button will cause the dialog to display all the available attributes of the data items to be imported.

Once you have made your choices click on the OK button to begin the import (or proceed to another Import dialog for additional data types). If you click cancel then none of the data will be imported. Data dependant on the data you are canceling import of will also be canceled- e.g. if you cancel a well import then logs, picks, and checkshots associated with these wells will also be cancelled .

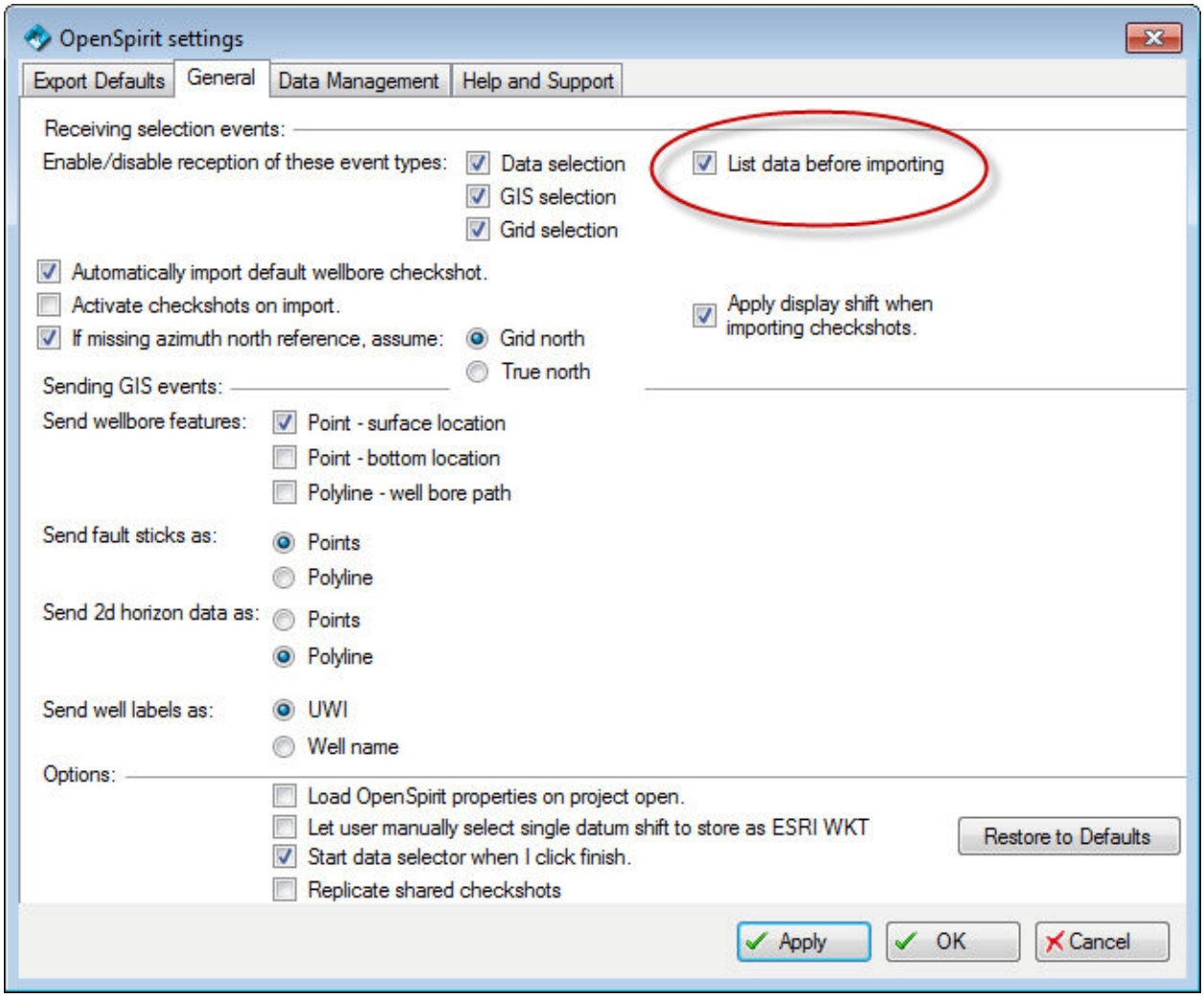
Refresh from External....

If an object in the Petrel tree was imported or exported via OpenSpirit, then a right-click action on that object (or a set of selected objects) will produce a context menu similar to the one below. The OpenSpirit options available in the context menu depend on the data type selected.



Selecting the "Refresh from external" menu item causes all the selected the Petrel objects to be reread from the external source via OpenSpirit.

If you want a chance to review the data that is to be refreshed and use the last modified date to control whether the Petrel objects are updated from the external source or not then you can turn the "List data before importing" option in the OpenSpirit settings dialog (as shown below) .

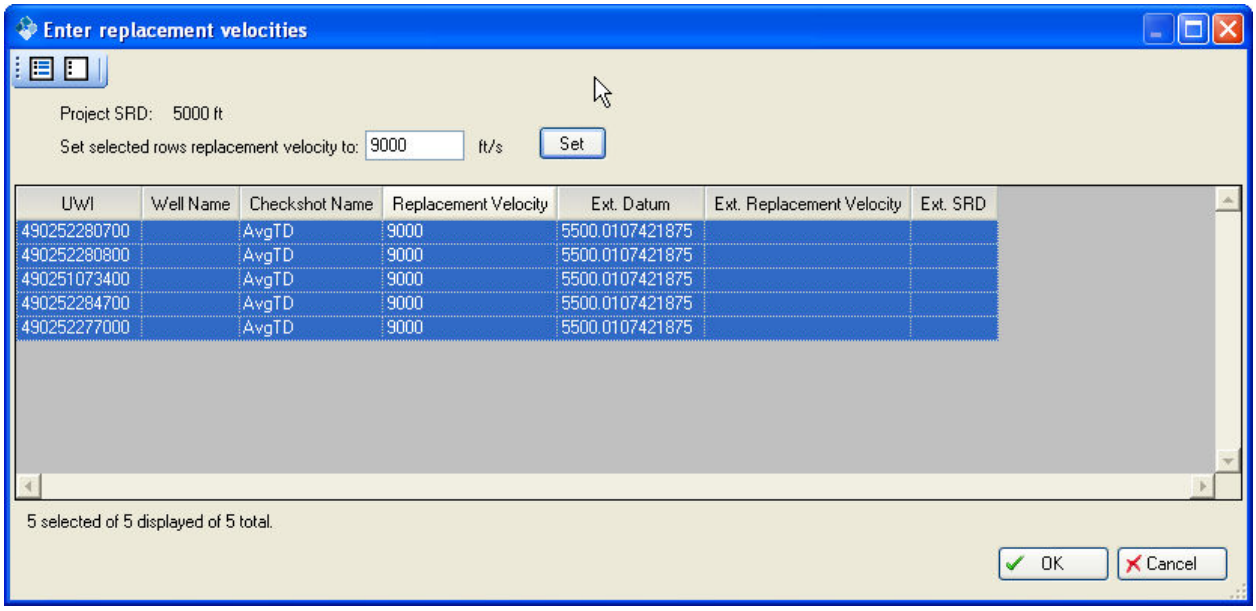


Seismic Datum Adjustments

If the source project has a *SRD* (Seismic Reference Datum) that is different from the Petrel *SRD* then the following data types will be shifted during import:

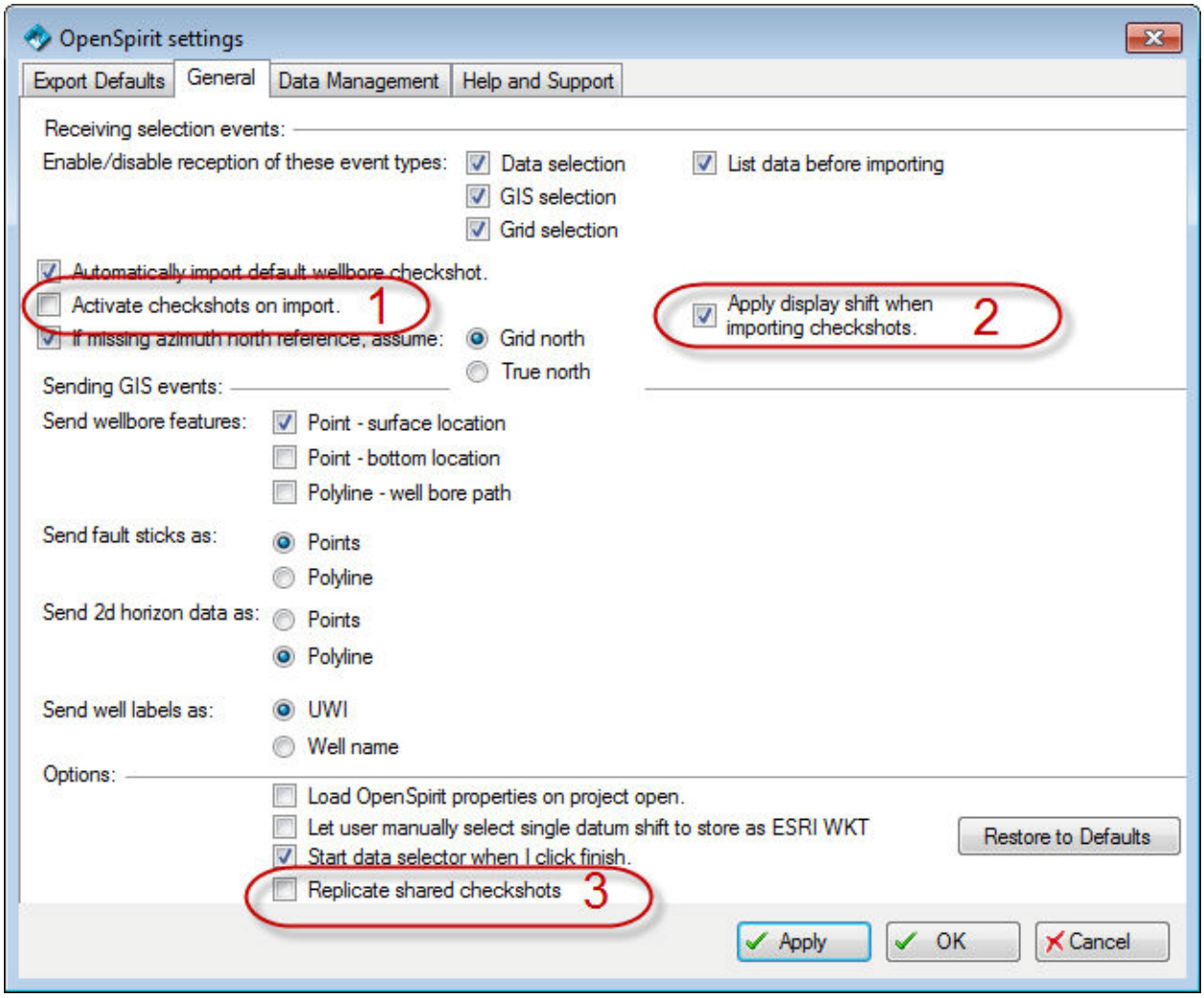
- Checkshots
- 2d seismic data sets (time domain)
- 3d seismic volumes (time domain)
- Seismic horizons (time domain)

In order to know how much to shift the time values by you are prompted to supply a replacement velocity. This should be the linear average velocity for the interval between the two SRDs.



Checkshot Import Options

In addition to checking the *SRD* of checkshots to be imported (discussed in the Seismic Datum Adjustments section) there are three additional options that control how checkshots are imported in Petrel. These are highlighted below:



1. Activate checkshots on import

If this option is enabled then after a checkshot is imported it will be set as the active checkshot on its parent well and a time log created for the well to allow time-depth conversion of the well and its associated data. Because activating a large number of checkshots in Petrel may take considerable time, this option is disabled by default. Even if checkshots are imported with this option disabled, a user may later activate the imported checkshots using the normal Petrel procedures.

2. Apply display shift

Some data sources (like OpenWorks) define a display shift on a checkshot that is to be applied when this checkshot is to be used for time-depth conversion. If this option is enabled then the time values of the checkshot will be shifted by its associated display shift during import.

Note: If such a checkshot is then edited in Petrel and saved back to its source project this display shift will be backed out during the export process. If, however, the checkshot is exported to some other project then the checkshot is exported without undoing the display shift (and the DisplayShift attribute is set to 0 on export).

3. Replicate shared checkshots

Some data sources (like GeoFrame) allow a checkshot that exists on one well to be "shared" to other wells. This means that the time-depth relationship defined by the shared checkshot will be used by all wells that "share" this checkshot. Normally, *OPAA* preserves this sharing concept when importing shared checkshots - only checkshots that are "owned" by its parent well will appear in the Global well logs folder in the Petrel Input tree and if this checkshot is "shared" to other wells then the shared checkshot will be used to calculate the time logs for these other wells. This is the default behavior in *OPAA*.

If this option is enabled, however, a shared checkshot will be copied to the wells that are sharing another well's checkshot so that it appears that every well has its own checkshot. This option may be useful if:

- You wish to make a copy of the shared checkshot in order to use as a starting point for editing of the checkshots on individual wells to better match an observed time -depth relationship (e.g. well-seismic correlation)
- To work around an issue in Ocean 2010.1 that does not allow shared checkshots to be correctly applied (note this issue does not appear in Petrel 2009.2 and is expected to be fixed in Petrel 2010.2)

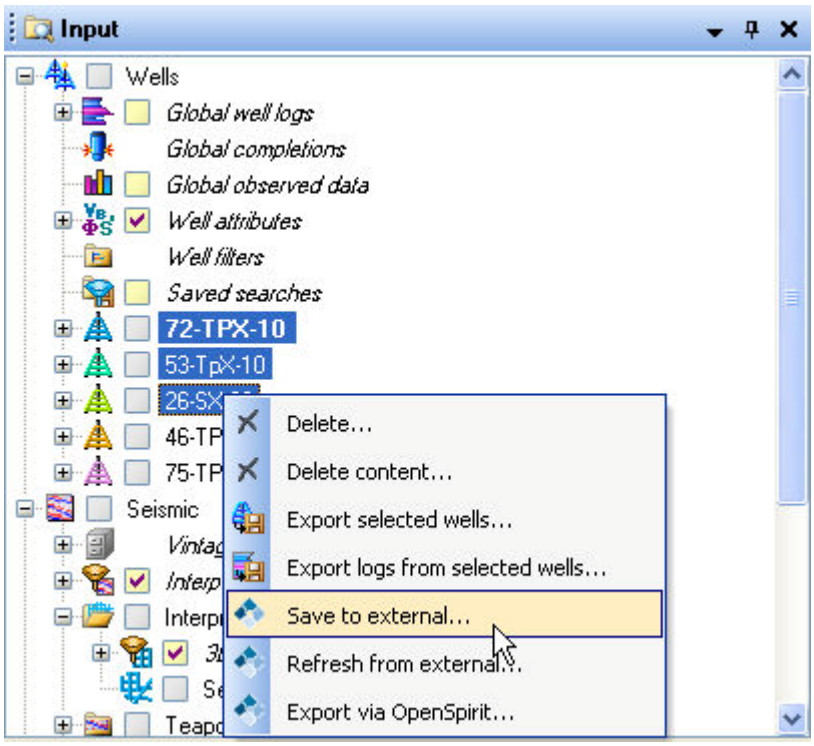
Export Data

Export Overview

Data may be exported from Petrel via OpenSpirit by either saving it to a data store that has an OpenSpirit *data connector* (e.g. OpenWorks, GeoFrame, Kingdom, etc...) or by sending a data full event (e.g. a GIS or *Grid event*) to another OpenSpirit enabled application (e.g. ArcGIS)

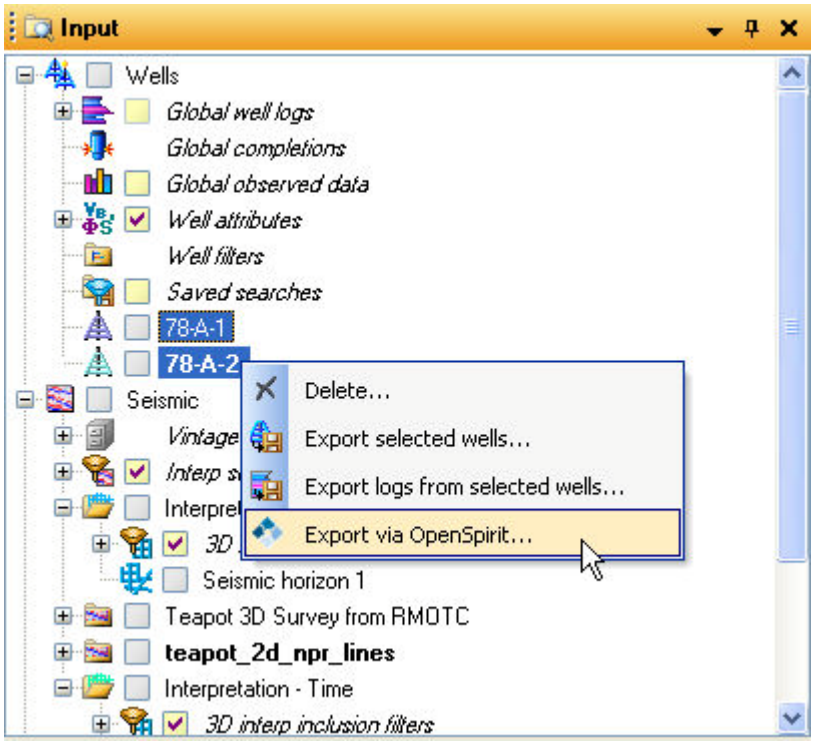
Export data to external data store

If an object in the Petrel tree was imported or exported via OpenSpirit, then the right-click action on that object (or a set of selected objects) will produce a context menu similar to the one below. The OpenSpirit options available in the context menu depend on the data type selected. For many objects, as illustrated below, you have a choice of saving it back to the external data store it is tied to ("Save to external...") . The export dialog will then be displayed and you can review the items that will be saved back to their linked external data stores. The export dialog will also allow you just to export those items that are newer in Petrel than in their external counterpart.



If a data item has not been imported or exported via OpenSpirit then it will not have an associated OpenSpirit *datakey* and in order to export it you will need to select the "Export via OpenSpirit ..." and ensure that you have set the default export project. If the default export project has not been set prior to this export then the OpenSpirit setting dialog will be displayed to allow you to do so. The export dialog will then be displayed and if matching

data is found in the export project you will have a choice of whether to overwrite this data or skip the export.



Export data to another application by sending a data full event

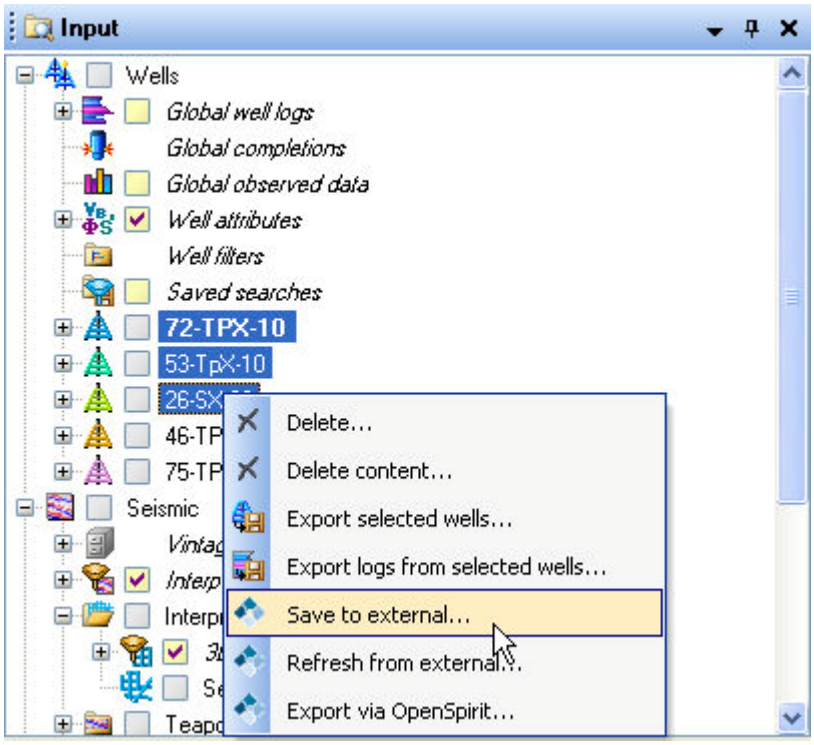
Sending a GIS or *Grid event* is described in the GIS Integration section. These events send their geometry (points, polylines, polygons, or grids) and attributes inside its message and are another way of transferring data to another application.

Export Overview

Data may be exported from Petrel via OpenSpirit by either saving it to a data store that has an OpenSpirit *data connector* (e.g. OpenWorks, GeoFrame, Kingdom, etc...) or by sending a data full event (e.g. a GIS or *Grid event*) to another OpenSpirit enabled application (e.g. ArcGIS)

Export data to external data store

If an object in the Petrel tree was imported or exported via OpenSpirit, then the right-click action on that object (or a set of selected objects) will produce a context menu similar to the one below. The OpenSpirit options available in the context menu depend on the data type selected. For many objects, as illustrated below, you have a choice of saving it back to the external data store it is tied to ("Save to external...") . The export dialog will then be displayed and you can review the items that will be saved back to their linked external data stores. The export dialog will also allow you just to export those items that are newer in Petrel than in their external counterpart.



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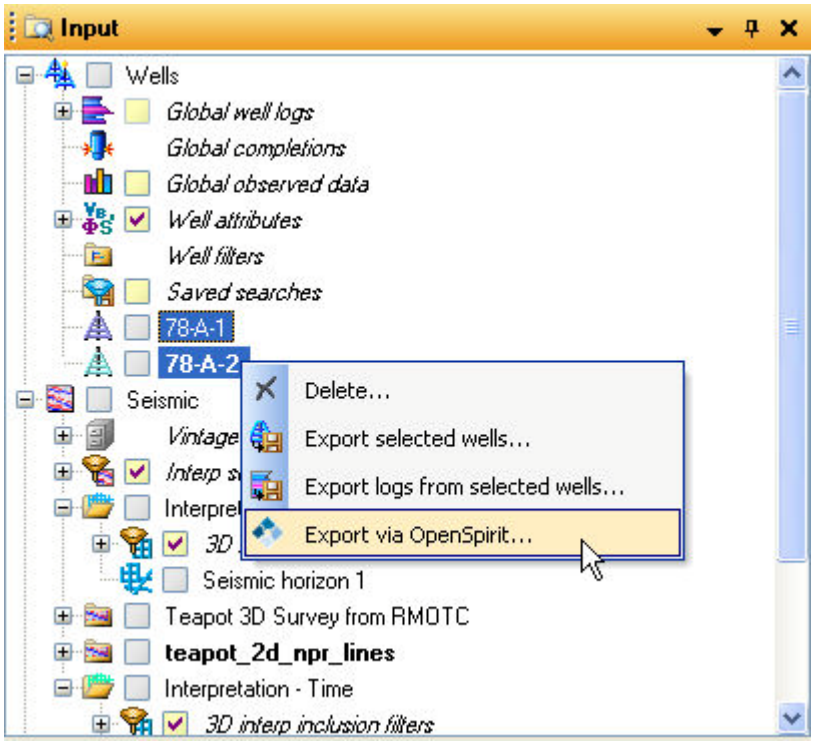


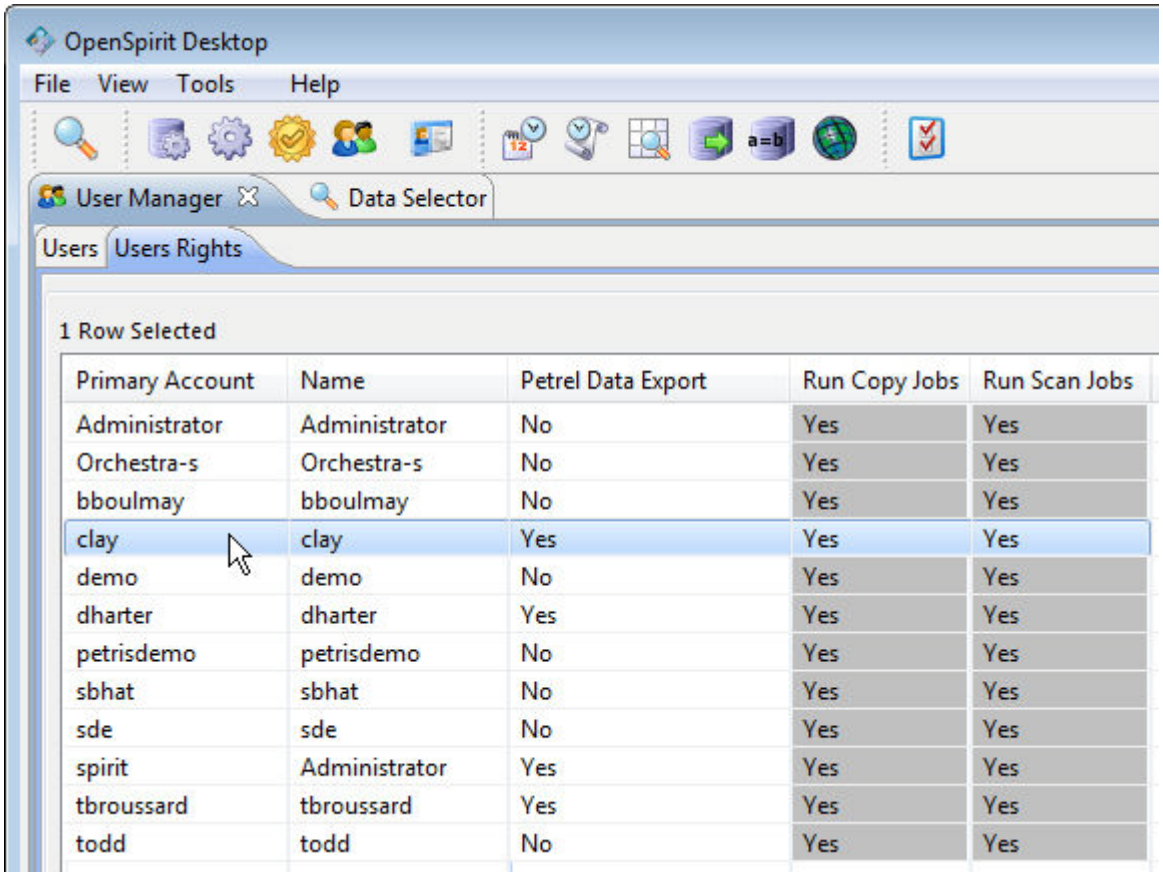
Export data to another application by sending a data full event

Sending a GIS or *Grid event* is described in the GIS Integration section. These events send their geometry (points, polylines, polygons, or grids) and attributes inside its message and are another way of transferring data to another application.

Restricting Export

Some companies may wish to only allow designated users to be able to export data from Petrel to external projects. While OpenSpirit always honors the access control implemented in the underlying data store that the *data connector* connects to, it is possible to further restrict a user's ability to export data from Petrel by using the User Manager tool in the OpenSpirit Desktop as shown below.

(Note: This capability is only available in OpenSpirit version 3.2.2 and higher.)

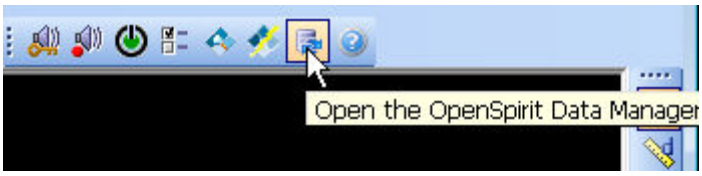


Primary Account	Name	Petrel Data Export	Run Copy Jobs	Run Scan Jobs
Administrator	Administrator	No	Yes	Yes
Orchestra-s	Orchestra-s	No	Yes	Yes
bboulmay	bboulmay	No	Yes	Yes
clay	clay	Yes	Yes	Yes
demo	demo	No	Yes	Yes
dharter	dharter	Yes	Yes	Yes
petrisdemo	petrisdemo	No	Yes	Yes
sbhat	sbhat	No	Yes	Yes
sde	sde	No	Yes	Yes
spirit	Administrator	Yes	Yes	Yes
tbroussard	tbroussard	Yes	Yes	Yes
todd	todd	No	Yes	Yes

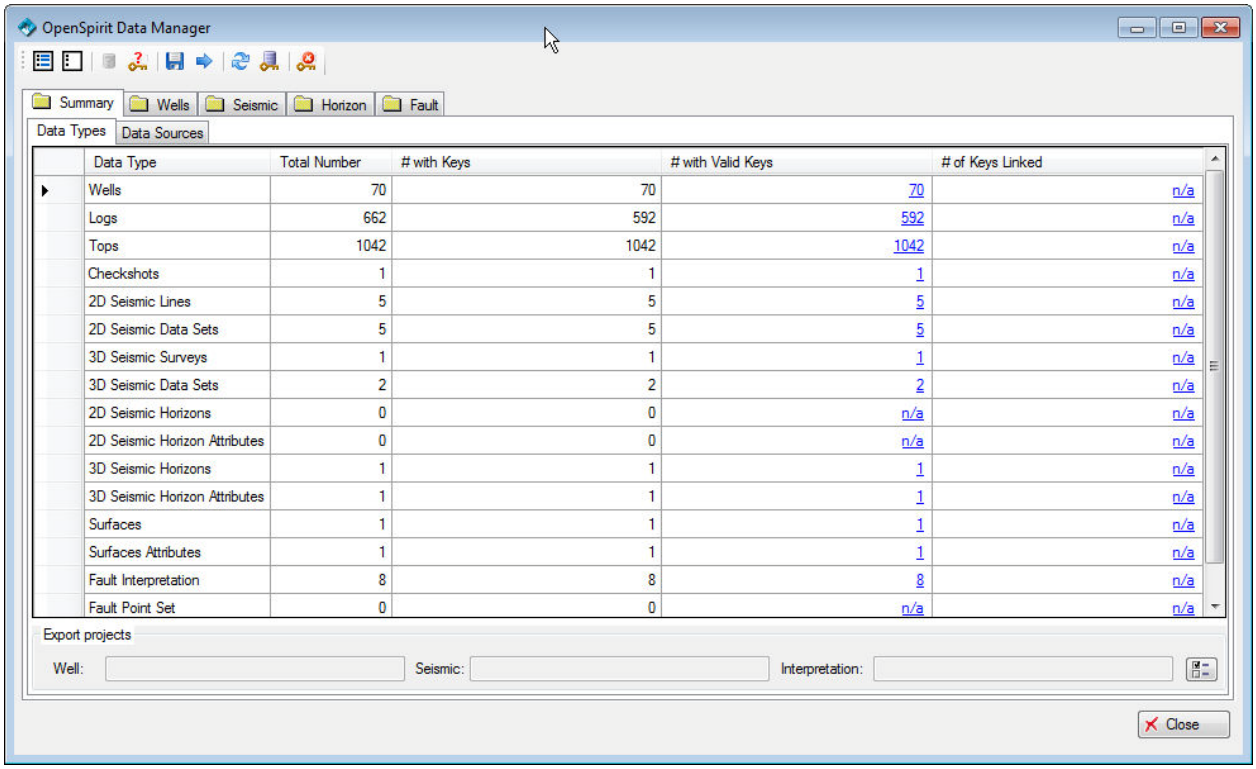
OpenSpirit Data Manager

OpenSpirit Data Manager Overview

This dialog allows a user to see a summary of all the Petrel objects that may be imported or exported via *OPAA*. It is displayed by clicking on the OpenSpirit data manager button on the OpenSpirit toolbar:



The OpenSpirit data manager looks like this:



Data Type	Total Number	# with Keys	# with Valid Keys	# of Keys Linked
Wells	70	70	70	n/a
Logs	662	592	592	n/a
Tops	1042	1042	1042	n/a
Checkshots	1	1	1	n/a
2D Seismic Lines	5	5	5	n/a
2D Seismic Data Sets	5	5	5	n/a
3D Seismic Surveys	1	1	1	n/a
3D Seismic Data Sets	2	2	2	n/a
2D Seismic Horizons	0	0	n/a	n/a
2D Seismic Horizon Attributes	0	0	n/a	n/a
3D Seismic Horizons	1	1	1	n/a
3D Seismic Horizon Attributes	1	1	1	n/a
Surfaces	1	1	1	n/a
Surfaces Attributes	1	1	1	n/a
Fault Interpretation	8	8	8	n/a
Fault Point Set	0	0	n/a	n/a

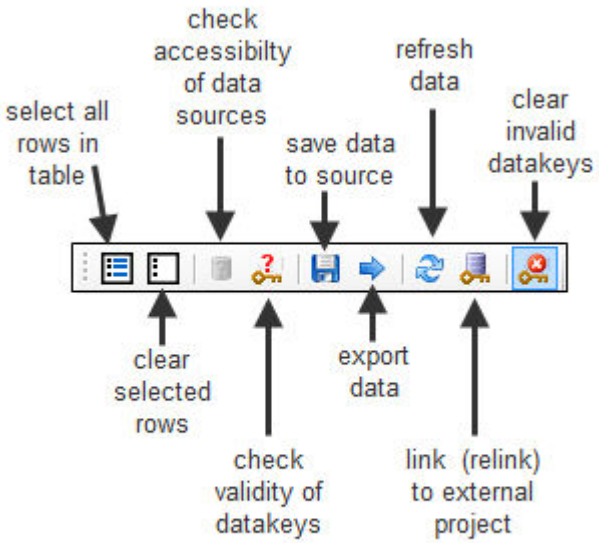
This manager allows a user to:

- See a count of all the Petrel objects, by type, that may be imported or exported via OpenSpirit (and see which have OpenSpirit datakeys)
- Check the current accessibility of the data sources of the Petrel objects that were imported via OpenSpirit

- Check which datakeys are still valid
- Save Petrel objects, or a selected subset, to source project(s)
- Export all objects, or a selected subset, to a chosen external project
- "Refresh" objects with valid datakeys (from the linked external project) for all objects or a selected subset
- Link Petrel objects to an external project (based on matching selected attributes)
- Clear invalid datakeys

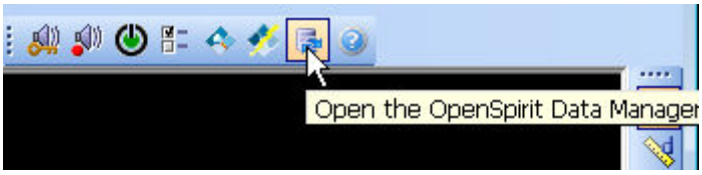
This functionality is accessed via the toolbar shown below and described in detail in the following linked sections.

(Click on toolbar button. or description below or above, to see more details)

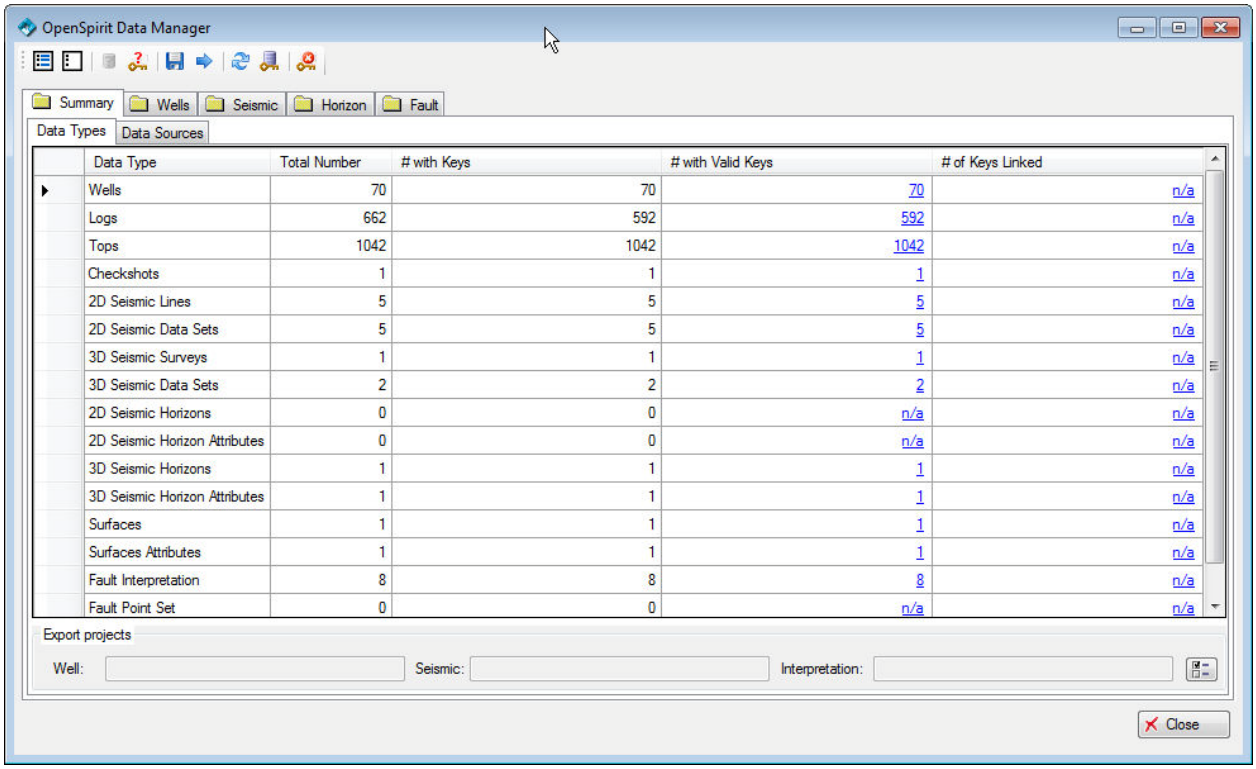


OpenSpirit Data Manager Overview

This dialog allows a user to see a summary of all the Petrel objects that may be imported or exported via *OPAA*. It is displayed by clicking on the OpenSpirit data manager button on the OpenSpirit toolbar:



The OpenSpirit data manager looks like this:



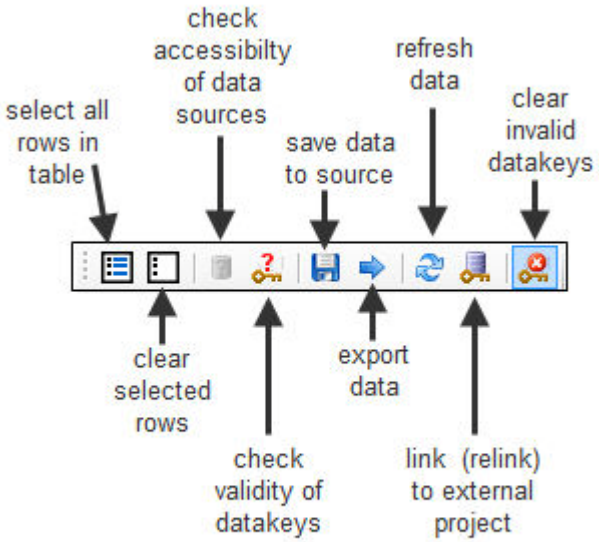
Data Type	Total Number	# with Keys	# with Valid Keys	# of Keys Linked
Wells	70	70	70	n/a
Logs	662	592	592	n/a
Tops	1042	1042	1042	n/a
Checkshots	1	1	1	n/a
2D Seismic Lines	5	5	5	n/a
2D Seismic Data Sets	5	5	5	n/a
3D Seismic Surveys	1	1	1	n/a
3D Seismic Data Sets	2	2	2	n/a
2D Seismic Horizons	0	0	n/a	n/a
2D Seismic Horizon Attributes	0	0	n/a	n/a
3D Seismic Horizons	1	1	1	n/a
3D Seismic Horizon Attributes	1	1	1	n/a
Surfaces	1	1	1	n/a
Surfaces Attributes	1	1	1	n/a
Fault Interpretation	8	8	8	n/a
Fault Point Set	0	0	n/a	n/a

This manager allows a user to:

- See a count of all the Petrel objects, by type, that may be imported or exported via OpenSpirit (and see which have OpenSpirit datakeys)
- Check the current accessibility of the data sources of the Petrel objects that were imported via OpenSpirit
- Check which datakeys are still valid
- Save Petrel objects, or a selected subset, to source project(s)
- Export all objects, or a selected subset, to a chosen external project
- "Refresh" objects with valid datakeys (from the linked external project) for all objects or a selected subset
- Link Petrel objects to an external project (based on matching selected attributes)
- Clear invalid datakeys

This functionality is accessed via the toolbar shown below and described in detail in the following linked sections.

(Click on toolbar button. or description below or above, to see more details)

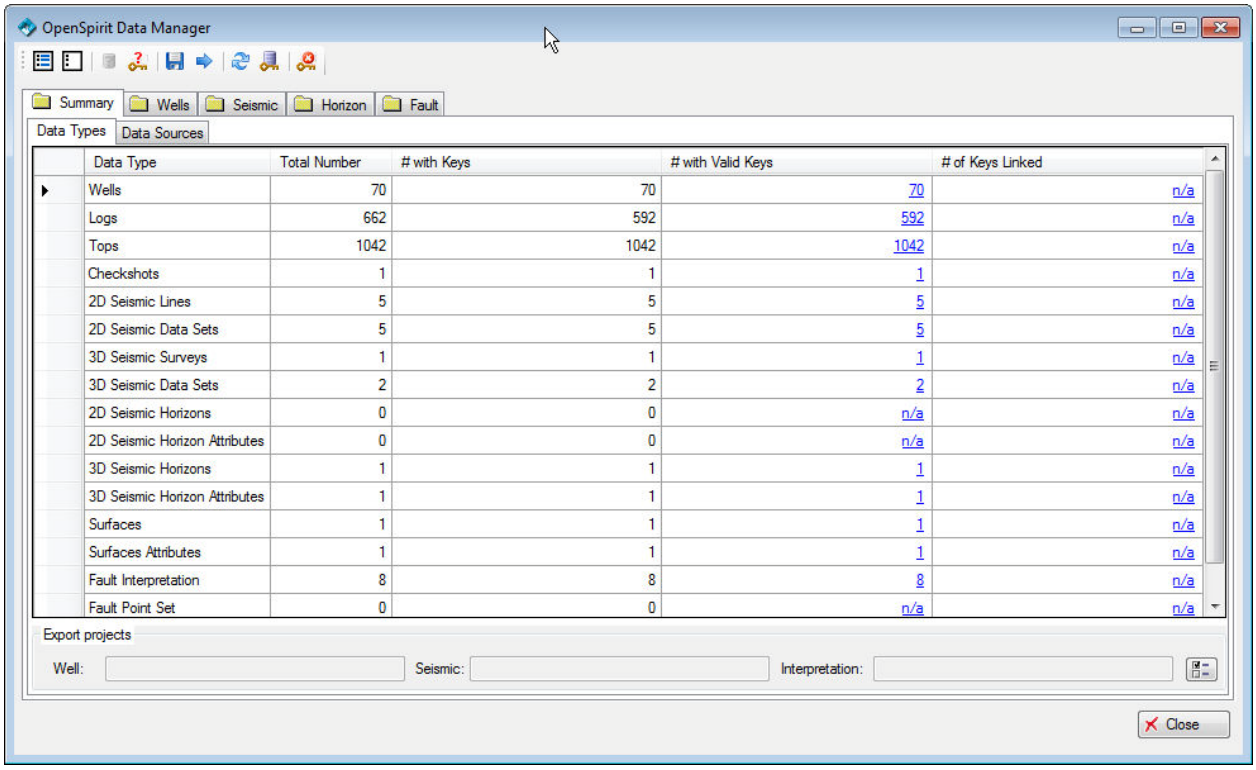


Data Summary

When the OpenSpirit Data Manager dialog is first opened it displays the summary tab which shows a summary of the Petrel object types that are supported by *OPAA*. As illustrated in the screenshot below, you can see the total number of objects , by type, within the current Petrel project as well as the number which have OpenSpirit datakeys. An OpenSpirit *datakey* is a link between a Petrel object and an external project. A Petrel object will have an OpenSpirit *datakey* if:

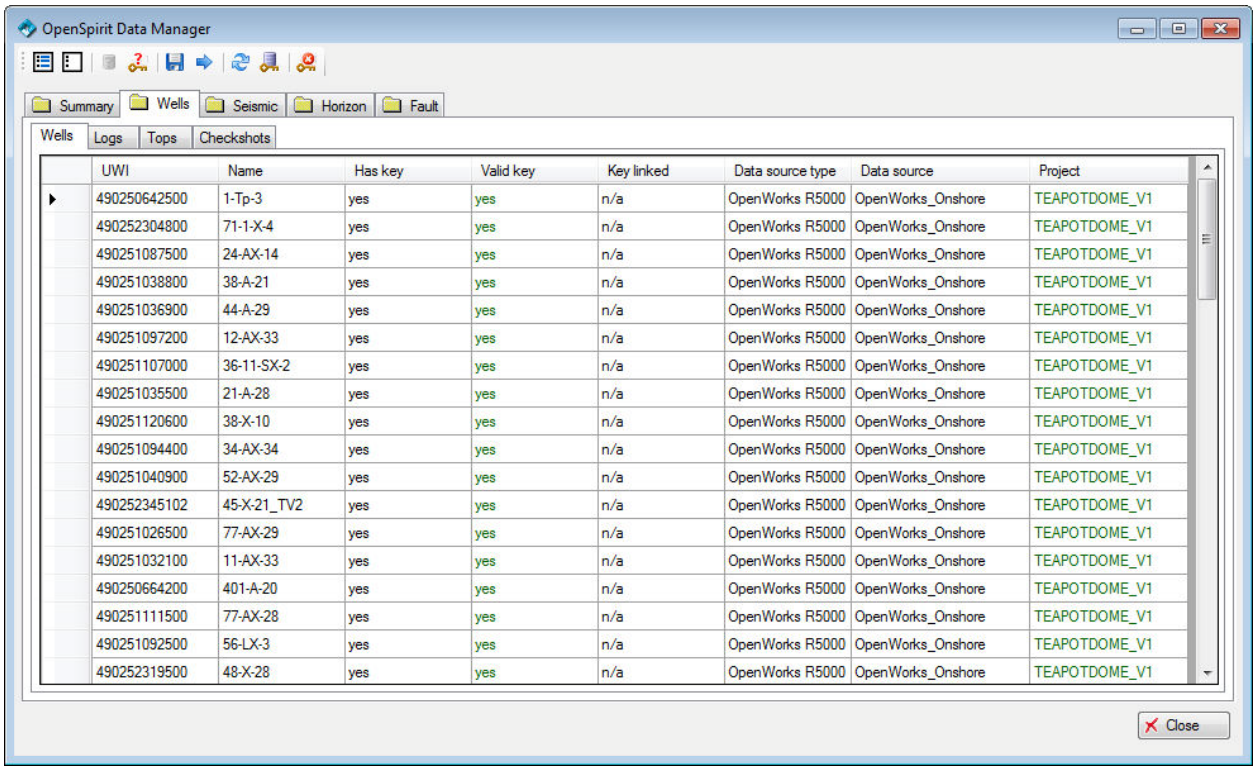
- It has been created via *OPAA* by receiving a *data selection event*
- It has been exported to an external project via *OPAA*
- It has been linked to an external project via *OPAA*

A *datakey* is valid if the project that it links to is still available and the referenced data item is still in the external project. If the valid keys column contains "n/a" it means that no attempt has been made to query the linked project so it is not known whether the key is valid or not.



Data Type	Total Number	# with Keys	# with Valid Keys	# of Keys Linked
Wells	70	70	70	n/a
Logs	662	592	592	n/a
Tops	1042	1042	1042	n/a
Checkshots	1	1	1	n/a
2D Seismic Lines	5	5	5	n/a
2D Seismic Data Sets	5	5	5	n/a
3D Seismic Surveys	1	1	1	n/a
3D Seismic Data Sets	2	2	2	n/a
2D Seismic Horizons	0	0	n/a	n/a
2D Seismic Horizon Attributes	0	0	n/a	n/a
3D Seismic Horizons	1	1	1	n/a
3D Seismic Horizon Attributes	1	1	1	n/a
Surfaces	1	1	1	n/a
Surfaces Attributes	1	1	1	n/a
Fault Interpretation	8	8	8	n/a
Fault Point Set	0	0	n/a	n/a

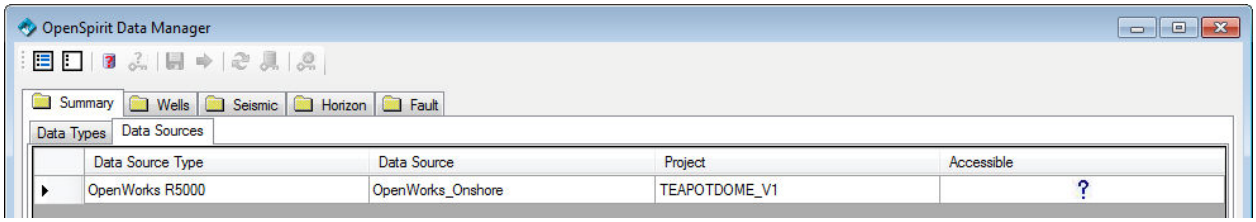
Clicking on the Wells, Seismic, Horizon, or Fault tab allows you to then see a detailed listing of individual objects of a given type:



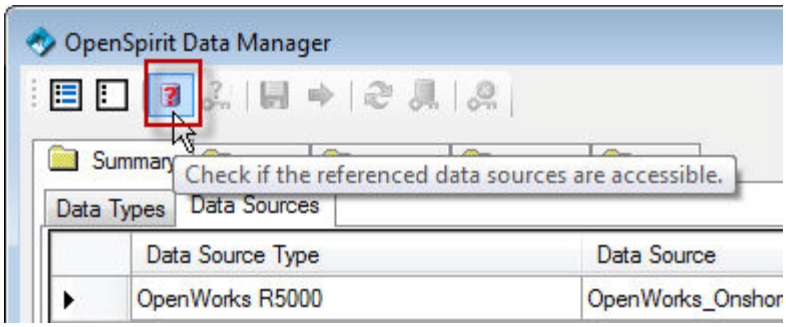
UWI	Name	Has key	Valid key	Key linked	Data source type	Data source	Project
490250642500	1-Tp-3	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490252304800	71-1-X-4	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251087500	24-AX-14	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251038800	38-A-21	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251036900	44-A-29	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251097200	12-AX-33	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251107000	36-11-SX-2	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251035500	21-A-28	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251120600	38-X-10	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251094400	34-AX-34	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251040900	52-AX-29	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490252345102	45-X-21_TV2	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251026500	77-AX-29	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251032100	11-AX-33	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490250664200	401-A-20	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251111500	77-AX-28	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490251092500	56-LX-3	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1
490252319500	48-X-28	yes	yes	n/a	OpenWorks R5000	OpenWorks_Onshore	TEAPOTDOME_V1

Check Data Source Accessibility

OpenSpirit *datakeys* contain a reference to the linked project and a reference to the individual data item within that project. In order to refresh or to export the Petrel object to the linked project, the external project must be accessible for the current Petrel user. This accessibility may be checked by clicking on the Summary-Data Sources Tab (illustrated below):



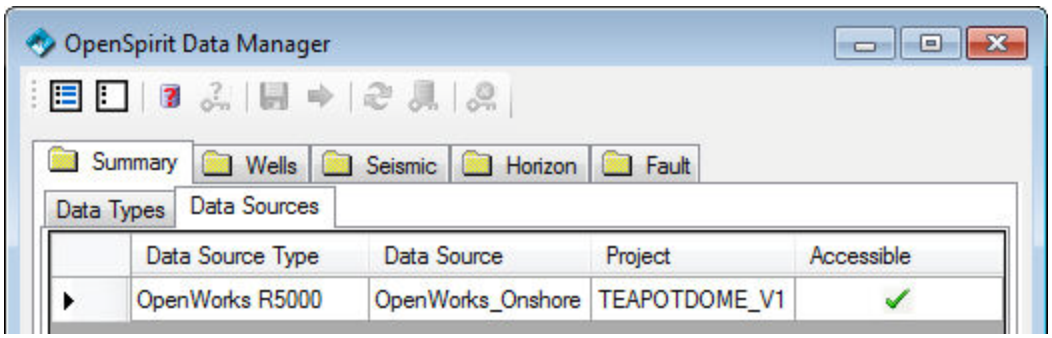
The "Accessible" column will initially show "?" until you click on this icon:



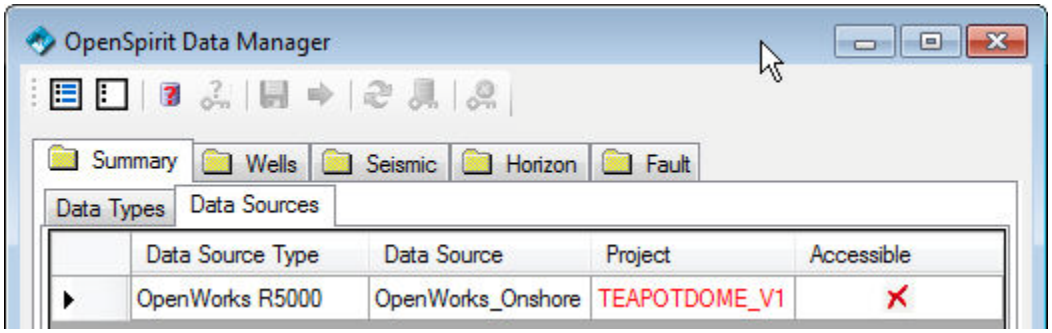
When this button is clicked, *OPAA* will make a simple query to the referenced project to verify that it is still accessible.

Note: It may take 10-60 seconds to execute this query if this is the first time this project has been accessed in this Petrel session as a remote OpenSpirit data connector process will need to be started.

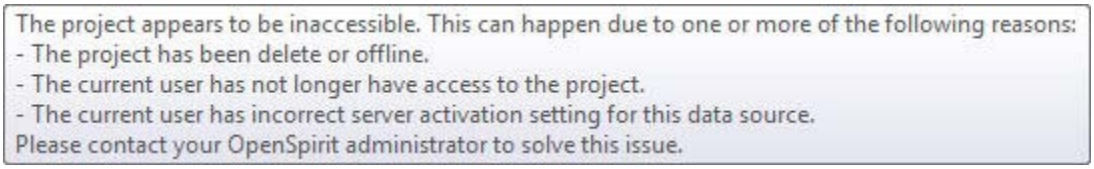
If the project is verified as being accessible it will be shown as:



And if it is not accessible as:



The likely causes of this are listed in the tooltip as:

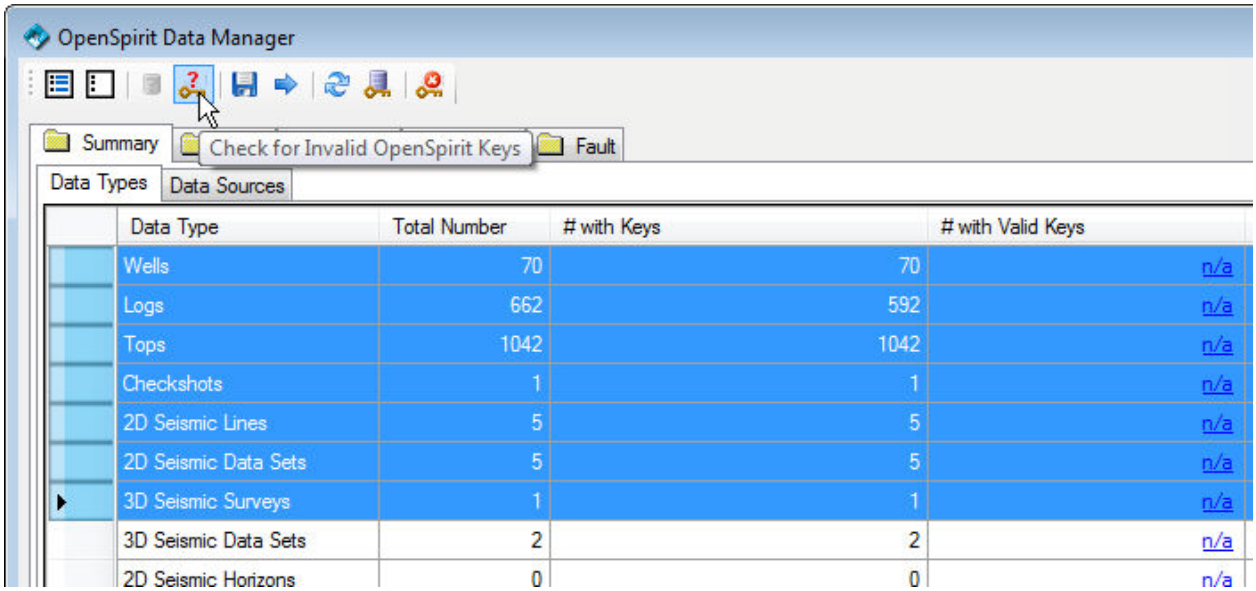


If the project is not accessible then you will not be able to refresh from, link to, or export to this data source.

Check Datakey Validity

If the data source is accessible (see Check Data Source Accessibility) then you may check to see if the *datakeys* referenced by Petrel objects are still valid. When the OpenSpirit data manager is first displayed the "# with Valid Keys" column will contain "n/a" (unless the data was just imported/exported in the current Petrel session). In order to check the validity of the *datakeys*, select some or all data types and click on this icon:

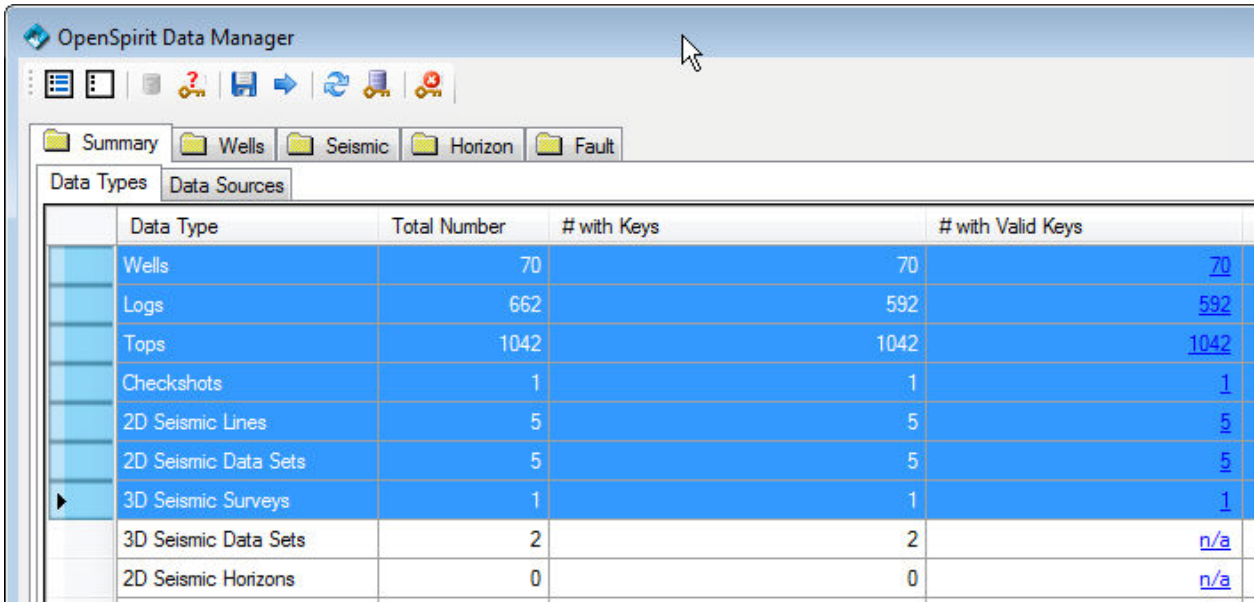
(this example would check the for the seven highlighted data types)



This will then cause *OPAA* to issue a query that validates that the *datakeys* still reference data items that exist in the external project(s).

Note: The time to validate datakeys will increase with the number of objects being validated and for large projects may take minutes.

After validation the display looks like this (in this example all keys were valid):

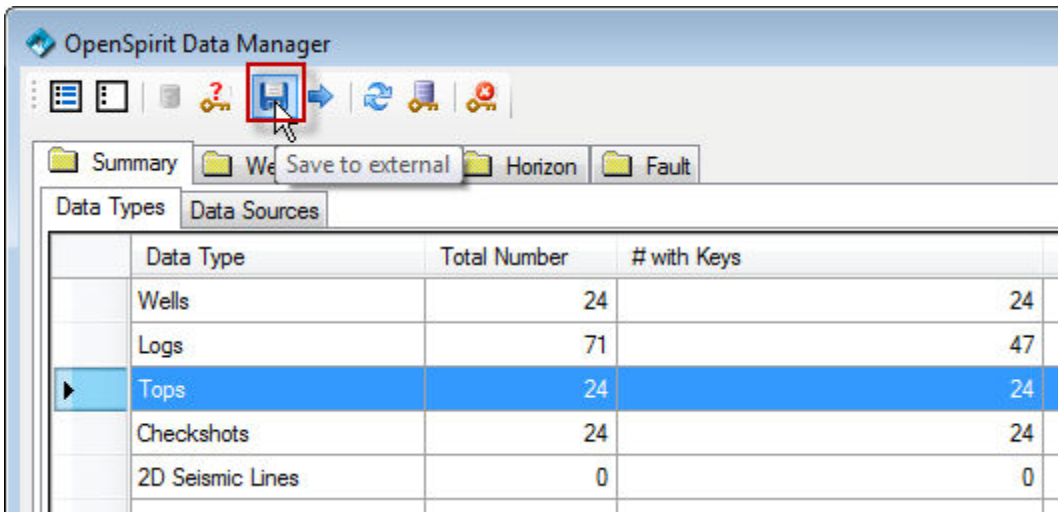


Keys will be invalid if the data source is not accessible or if the referenced data items have been deleted from the data source.

Note: You may also validate datakeys from the detailed Well, Seismic, Horizon, or Fault tabs. This allows you to just validate selected objects, if desired.

Save objects to source project

Petrel objects that have valid *datakeys* may be saved back to the linked external project by clicking on this button:



You may select a single data type (as shown above) or multiple data types.

This allows a user to save objects that have been edited in Petrel back to their source project. This may also be done from the Petrel Input tree (see Export Overview).

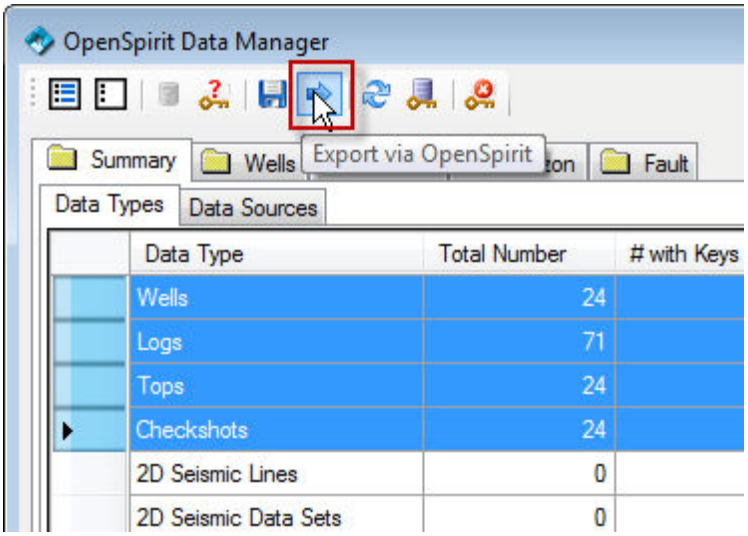
Notes:

- *You may also save objects from the detailed Well, Seismic, Horizon, or Fault tabs. This allows you to just save selected objects, if desired.*
- *The time to save objects will increase with the number of objects being saved and for a large number of objects may take minutes.*
- *The Save toolbar button is always enabled in the OpenSpirit Data Manager. However, the process will simply skip any objects that don't support the save to external operation (e.g. they don't have a datakey).*

Export Objects

Regardless of whether a Petrel object has a *datakey* or not, it may be saved to an external project. Select one or more data types (or individual objects from the Well, Seismic, Horizon, or Fault tabs) and click on this button:

(this example would export all the wells, logs, tops, and checkshots)



If you have not previously selected export projects you will be prompted to do so (see OpenSpirit Settings).

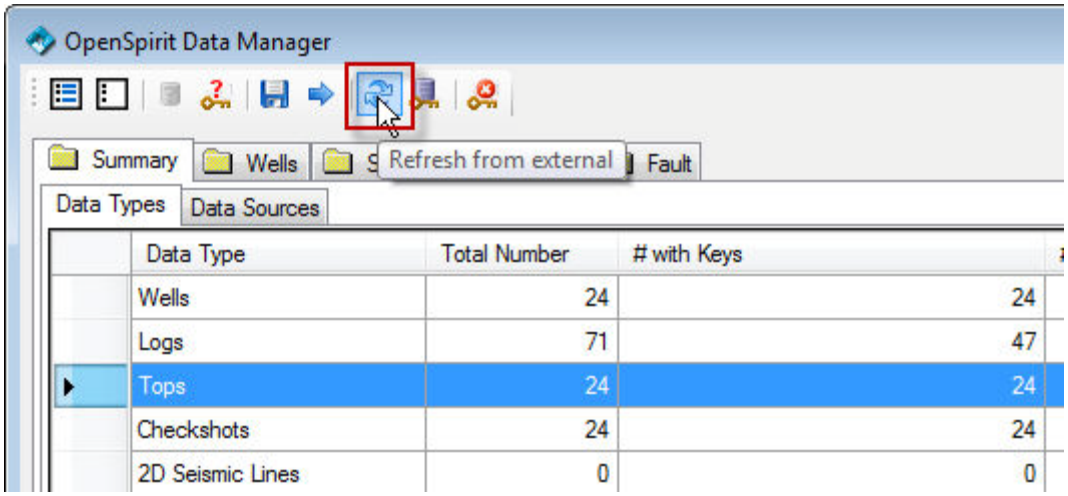
Notes:

- *If you export a Petrel object that has an OpenSpirit datakey , this datakey will be replaced with the datakey referencing the project you export the object to.*
- *The time to export objects will increase with the number of objects being exported and for a large number of objects may take minutes.*

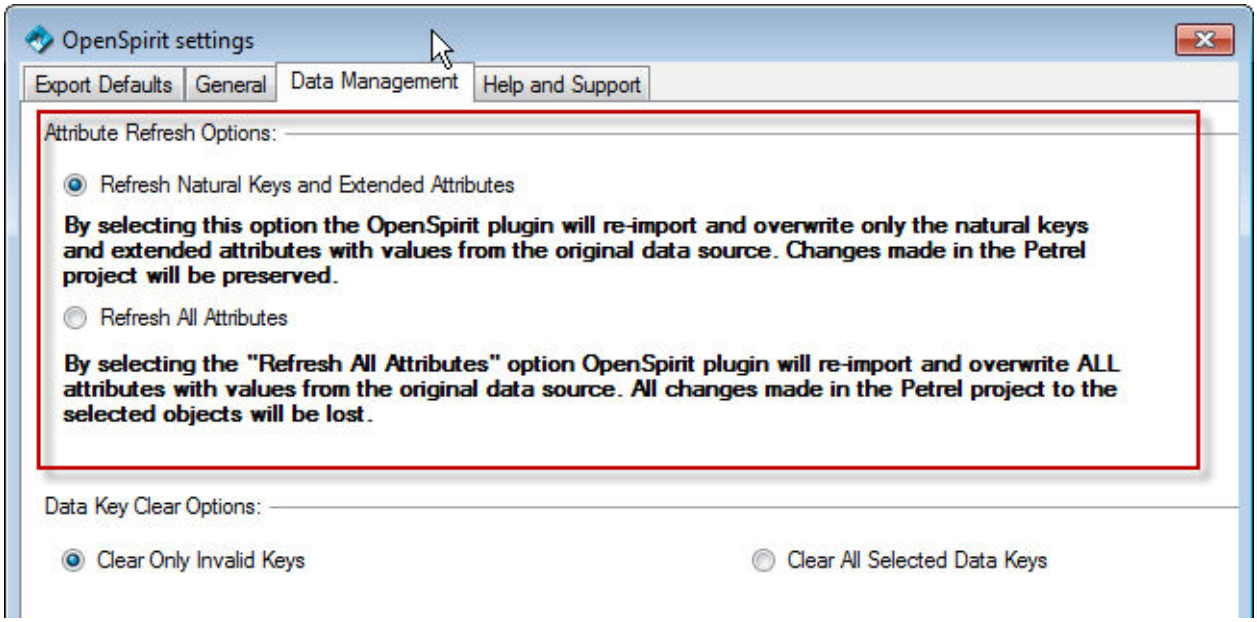
Refresh Objects

If a Petrel object has a valid *datakey* then it may be "refreshed" from the linked external data source. Select one or more data types (or individual objects from the Well, Seismic, Horizon, or Fault tabs) and click on this button:

(this example would re-read the 24 well markers , aka tops, from their linked data source)



When refreshing data you have an option whether you want to update all Petrel object attributes or just the natural key (the attributes that will be used to match Petrel objects to an external source) and OpenSpirit extended attributes (attributes that don't map to the standard Petrel attributes but are saved with the Petrel object as OpenSpirit attributes). This behavior is controlled by the OpenSpirit settings dialog (as shown below):



This attribute refresh option may be very useful when the Petrel object was originally created with the Schlumberger OpenSpirit plug-in (available in Petrel 2009.2 and earlier). In this case, no OpenSpirit extended attributes, other than the *datakey*, are stored with the Petrel object. By executing this refresh operation the additional attributes available via *OPAA* are added to existing Petrel objects.

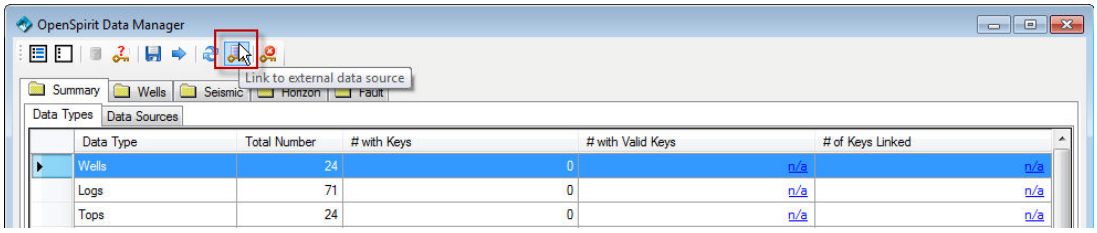
Notes:

- *The time to refresh objects will increase with the number of objects being validated and for large projects may take minutes.*
- *You may also validate datakeys from the detailed Well, Seismic, Horizon, or Fault tabs. This allows you to just validate selected objects, if desired.*
- *The Refresh toolbar button is always enabled in the OpenSpirit Data Manager. However, the process will simply skip any objects that don't support refresh (e.g. they don't have a datakey).*

Link (or Relink) to External Project

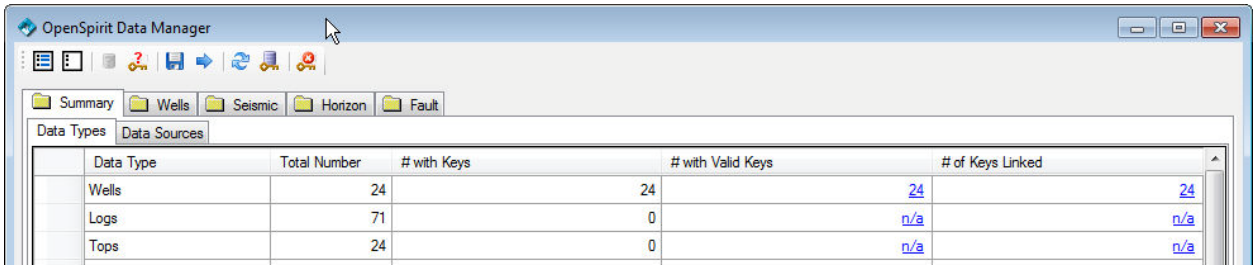
Regardless of whether a Petrel object has a *datakey* or not, it may be linked to an external project. Select one or more data types (or individual objects from the Well, Seismic, Horizon, or Fault tabs) and click on this button:

(this example will attempt to link the 24 wells in the project)



This linking operation will then attempt to match the Petrel objects' natural key attributes to data in the chosen export project. If a match is found then the matching *datakey* will be saved with the Petrel object. If matches are found then the selected data rows will be updated as appropriate:

(in this example 24 wells were successfully linked)



The default matching natural keys are defined in the OpenSpiritPlugin.config file in the MatchMergeRules element for each data type. The default attributes that are used are summarized in this table:

Data Type	Attributes Used to Find Matches

Wells	uwi
Logs	well uwi, log kind (Petrel log version name), sum of non-null log samples (if other attributes match)
Tops	well uwi, top name, interpreter, occurrence
Checkshots	well uwi, checkshot name
2D Seismic Lines	survey name, line name
2D Seismic Data Sets	line name, name, domain
3D Seismic Surveys	survey name
3D Seismic Data Sets	survey name, name, domain, storage organization (e.g. trace, slice, etc..)
2D Seismic Horizons	name, line name, domain
2D Seismic Horizon Attributes	name, line name, domain
3D Seismic Horizons	name, 3d survey name, domain
3D Seismic Horizon Attributes	horizon name, attribute name
Surfaces	name, domain
Surfaces Attributes	surface name, attribute name
Fault Interpretation	name, domain
Fault Point Set	name, domain
Fault Polygons	name, domain

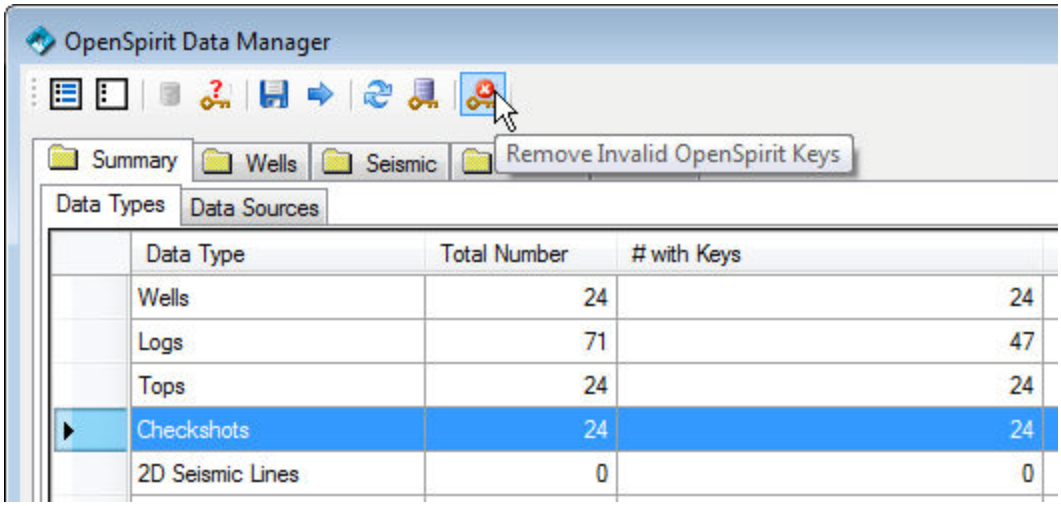
These default values are appropriate for matching data stored in OW that has been migrated from OW 2003 to R5000. The matching attributes may be altered by editing the OpenSpiritPlugin.config XML file. Please contact support@openspirit.com for help with this task. ***Warning: editing this file without taking great care may cause undesirable results***.

Note: If the Petrel object has an existing datakey and a match is found the new matching datakey will replace the existing datakey. The original source project may still be determined by examining the Petrel object history.

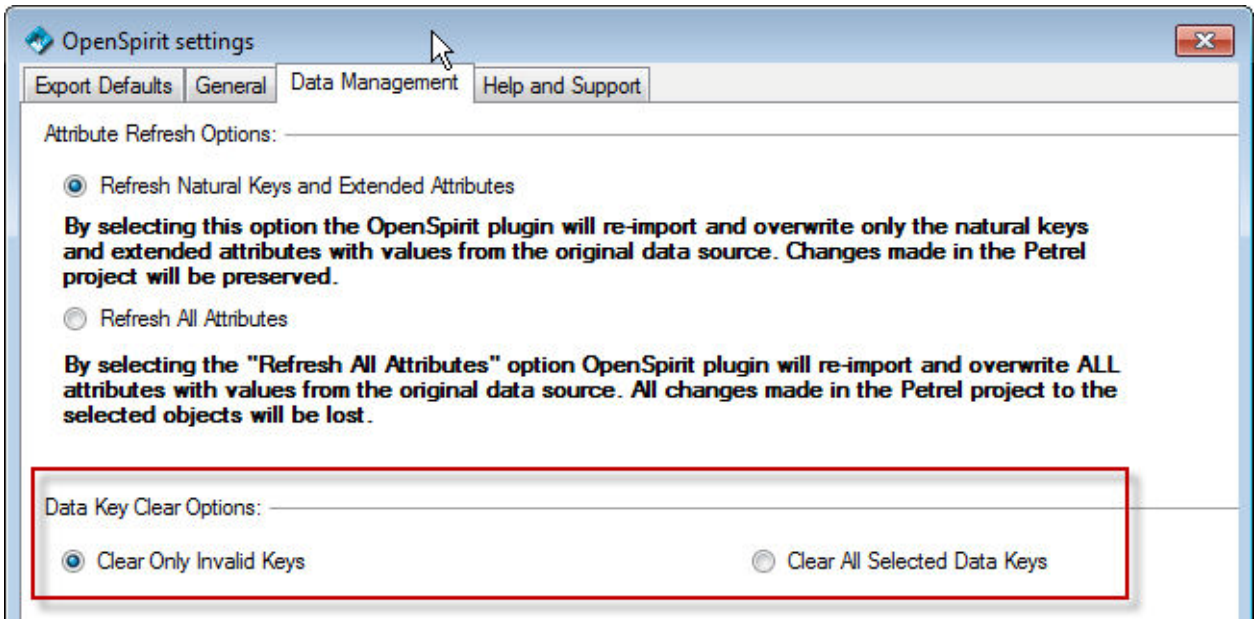
Clear Datakeys

Select one or more data types (or individual objects from the Well, Seismic, Horizon, or Fault tabs) and click on this button:

(this example would either clear all 24 checkshot *datakeys* or just those that were invalid - based upon the Data Management Options settings)



This setting in the Data Management tab of the OpenSpirit settings dialog determine whether all *datakeys* for the selected objects will be cleared or just the invalid keys (the default).



Notes:

- ***Clearing datakeys is irreversible! It does not remove any Petrel object attributes but does remove the link to the external data source. If this data source is no longer available (it is invalid) then this is normally a desirable thing to do. Even if datakeys are cleared, the Petrel object history carries information on which projects the object was created from or exported to.***

- *You may also validate datakeys from the detailed Well, Seismic, Horizon, or Fault tabs. This allows you to just validate selected objects, if desired.*

OpenWorks 2003 to R5000 Migration Workflow

Many users of Petrel use the Landmark OpenWorks product to store their multi-user project data. Many of these users are migrating from the 2003.12 version to the R5000 version of OpenWorks. As these projects are upgraded the links stored in the OpenSpirit *datakeys* in Petrel projects created via OpenSpirit become invalid. This is caused by:

- changing names of the OpenSpirit data source associated with the OpenWorks installations
- substantive changes in the OpenWorks data model and changing primary keys (especially in the seismic and interpretation areas)
- splitting and combining of projects as data is migrated

The OpenSpirit Data Manager capabilities described in this section may be combined in a multi-step workflow to re-link a Petrel project that was originally linked to an OpenWorks 2003 project to a migrated R5000 project. To do this, follow these steps:

1. If the Petrel project was created via the Schlumberger OpenSpirit plug-in then the Petrel objects will not have as many attributes as if the objects had been imported via *OPAA*. In order to add these additional attributes, which aid in matching, you can refresh all the objects. Note that this step must be done while the OW2003 project is still available. This step is not required if the Petrel project was created using *OPAA*.
2. During the migration from OW2003 to R5000 keep track of which OW2003 and SeisWorks projects migrate to which R5000 projects.
3. After the new R5000 projects are created you can open up each Petrel project and use the OpenSpirit Data Manager to view which OW 2003 projects were used in the project (use the Summary - Data Sources tab but don't attempt to validate the data sources). Then, using the information gathered in step 2, determine which R5000 project(s) you will want to link the Petrel project to.
4. Set the default export project to the R5000 project determined in step 3 and then link the desired data types. Repeat this step for every project identified in step 3.
5. After successfully linking the Petrel project to the new R5000 project(s) some Petrel objects may still have invalid keys (e.g. perhaps the linked OW2003 data item was not migrated). So to avoid future confusion, you may wish to clear all invalid keys (the OW 2003 datakey will have no use in the future without the original OW2003 project being available) .

GIS Integration

GIS Integration

The OpenSpirit Ocean Petrel *Application Adapter* allows Petrel to be integrated with your GIS data and applications in a variety of ways.

- **Import data from ArcSDE**

  By utilizing the OpenSpirit SDE *data connector* and the Data Selector you can send data selection events for point, polyline, and polygon features to Petrel. Corresponding Petrel point and polyline objects will be created (this is described in the Import Overview)

- **Receive GIS or Grid events**

  By utilizing the OpenSpirit ArcGIS Extension you can send GIS events for selected point, polyline, and polygon features to Petrel and corresponding Petrel point and polyline objects will be created . You can also send ESRI raster features from ArcGIS which will create corresponding Petrel surfaces. This is described in the Import Overview.

- **Send GIS or Grid events**

  You may send GIS events based on the geometry of selected Petrel objects. You may also send a Petrel surface as a grid event. Then other applications (like ArcMap with the OpenSpirit ArcGIS Extension) will receive these features and add them to them to its current map. This is discussed in more detail in the Event Overview.

- **Share cursor position with ArcMap**

  By utilizing the OpenSpirit ArcGIS Extension you can bidirectionally share the x,y,z cursor location between the Petrel 3D or Map window and ArcMap. This is discussed in more detail in the Cursor Tracking section.

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Event Interaction

Event Overview

In the OpenSpirit integration framework events are messages that are shared between applications. By registering with OpenSpirit to send and receive various event types, applications can coordinate their actions with other applications without having to know anything about the other applications. This allows users to put together various applications to best accomplish their own workflows.

Event Types

The OpenSpirit Ocean Petrel *A*pplication Adapter uses the following OpenSpirit events

Event Type	Send or Receive?	Description
Data Selection	send/receive	send /receive *datakeys* which represent references to data in OpenSpirit enabled data stores
GIS	send/receive	send /receive point, polyline, or polygon features (geometry plus attributes) with their associated *CRS*
Grid	send/receive	send /receive a grid of z values along with their associated unit & *CRS*
Cursor	send/receive	send /receive continuous x,y,z cursor location along with the associated *CRS*

Enabling Events

In order to receive events you must:

- Make sure Petrel is connected to OpenSpirit (the OpenSpirit toolbar connection icon should be green)
- Make sure that events are turned on for listening
    - The lightning bolt is visible on the OpenSpirit logo on the OpenSpirit toolbar (like this)
    - The OpenSpirit settings dialog has the events type of interest enabled (see OpenSpirit Settings Overview)

Data Selection Events

Receiving data selection events is discussed in the Import Overview.

If a Petrel object has been imported or exported via OpenSpirit then it has an OpenSpirit datakey stored with it and you may then send a data selection event that references the data in the external data store. Select one or more objects in the Petrel tree and then click on the send data selection toolbar button: . When the event is sent any other application, run by the same user, that is registered for listening for data selection events of this type will receive the event and read the data from the referenced data store.

GIS Events

Receiving GIS events is discussed in the Import Overview.

Virtually any Petrel object with a geometry that can be expressed as a set of points, polylines, or polygons may be sent as a *GIS event*. Select one or more objects in the Petrel tree and then click on the send GIS/Grid toolbar button: . When the event is sent any other application that is registered for listening for GIS events will receive the event and make use of the selected features included in the event (e.g. ArcMap will add these features to its current map)

Grid Events

Receiving Grid events is discussed in the Import Overview.

Petrel surfaces are represented as regular grids and may be sent as a *grid event*s. Select a single Petrel surface in the Petrel tree and then click on the send GIS/Grid toolbar button: .

Event Overview

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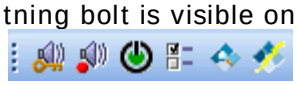
  - The lightning bolt is visible on the OpenSpirit logo on the OpenSpirit toolbar (like this )
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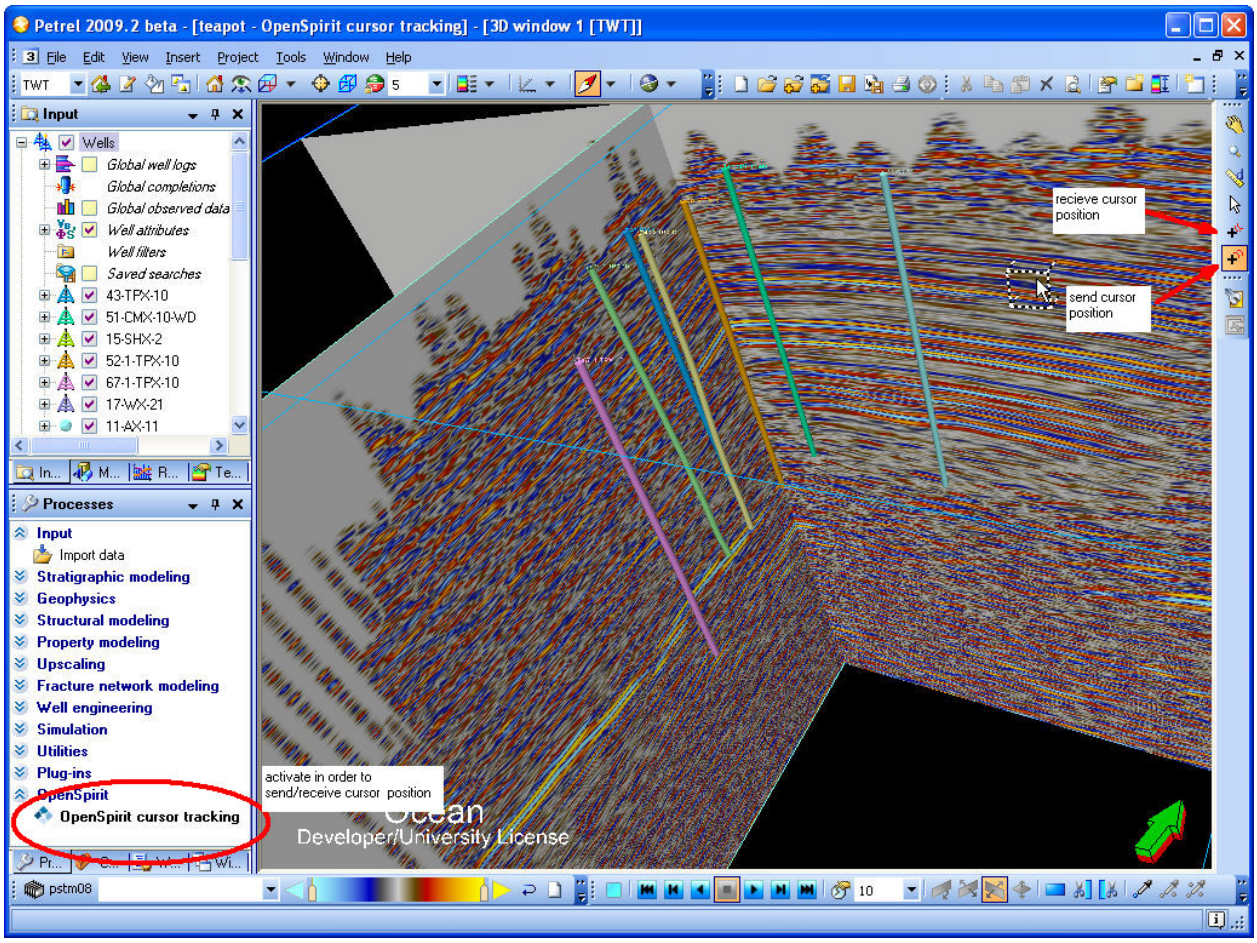
Cursor Tracking

Via OpenSpirit you can share a cursor event with other OpenSpirit enabled applications (e.g. OpenSpirit viewers, ESRI's ArcMap, another instance of Petrel, Paradigm's GOCAD, etc..) .

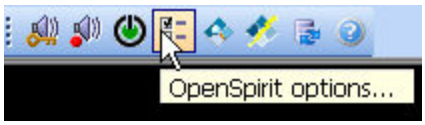
Cursor tracking works in either the Petrel 3D or Map windows. To activate cursor tracking click on the OpenSpirit cursor tracking process in the Processes window as illustrated below. Then click on the appropriate window icon on the right in order to send or receive the cursor position. Note that OpenSpirit will automatically account for differences in coordinate systems between applications. It will not, however, convert between time and depth domains. Ensure that if you are sending an x,y,z cursor from a 3d window that both applications are either in the depth or time domain (OpenSpirit will take care of unit conversion of the z values and coordinate conversion of the X,Y values).



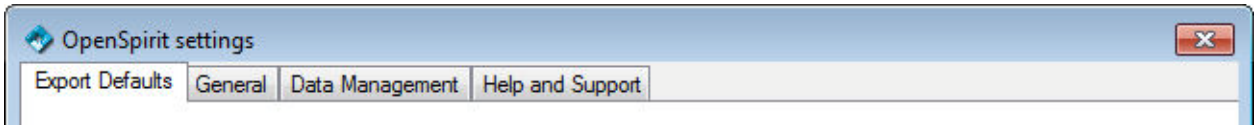
OpenSpirit settings

OpenSpirit Settings Overview

This dialog allows you to set default options that control how OPAA behaves. This dialog is displayed by clicking on this button on the main OpenSpirit toolbar (or from the Project->OpenSpirit settings.. menu item):



There are four tabs in this dialog that are described in more detail in the following sections.



- Export Defaults - set the default export project and default interpreter
- General - options that control sending and receiving of events and import of data
- Data Management - options that control the OpenSpirit Data Manager
- Help and Support - display version information, set debug logging levels, and send email to OpenSpirit support

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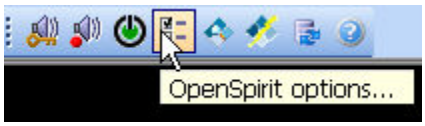

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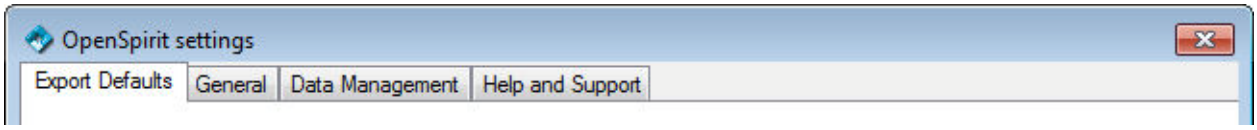

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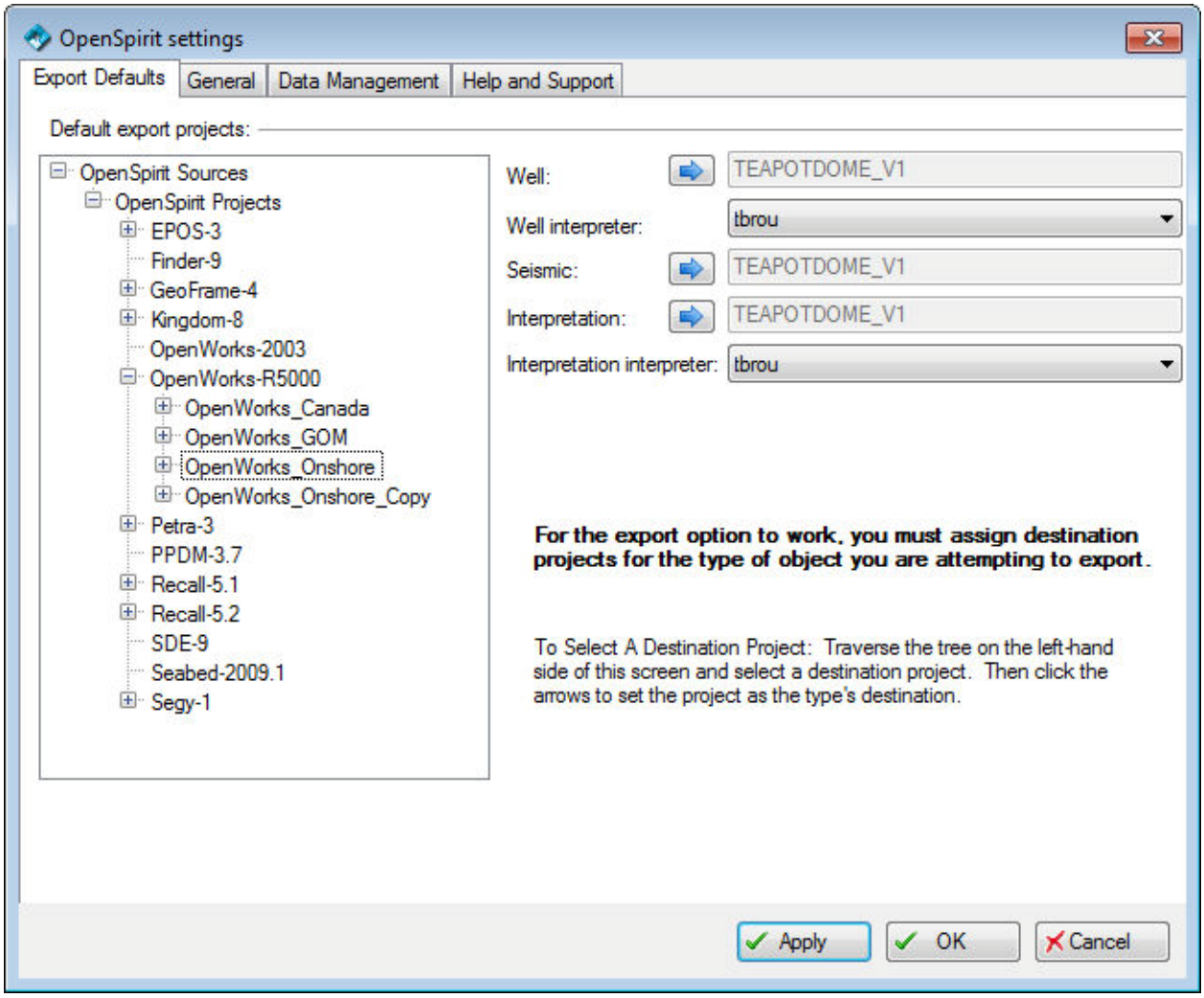
Export Defaults

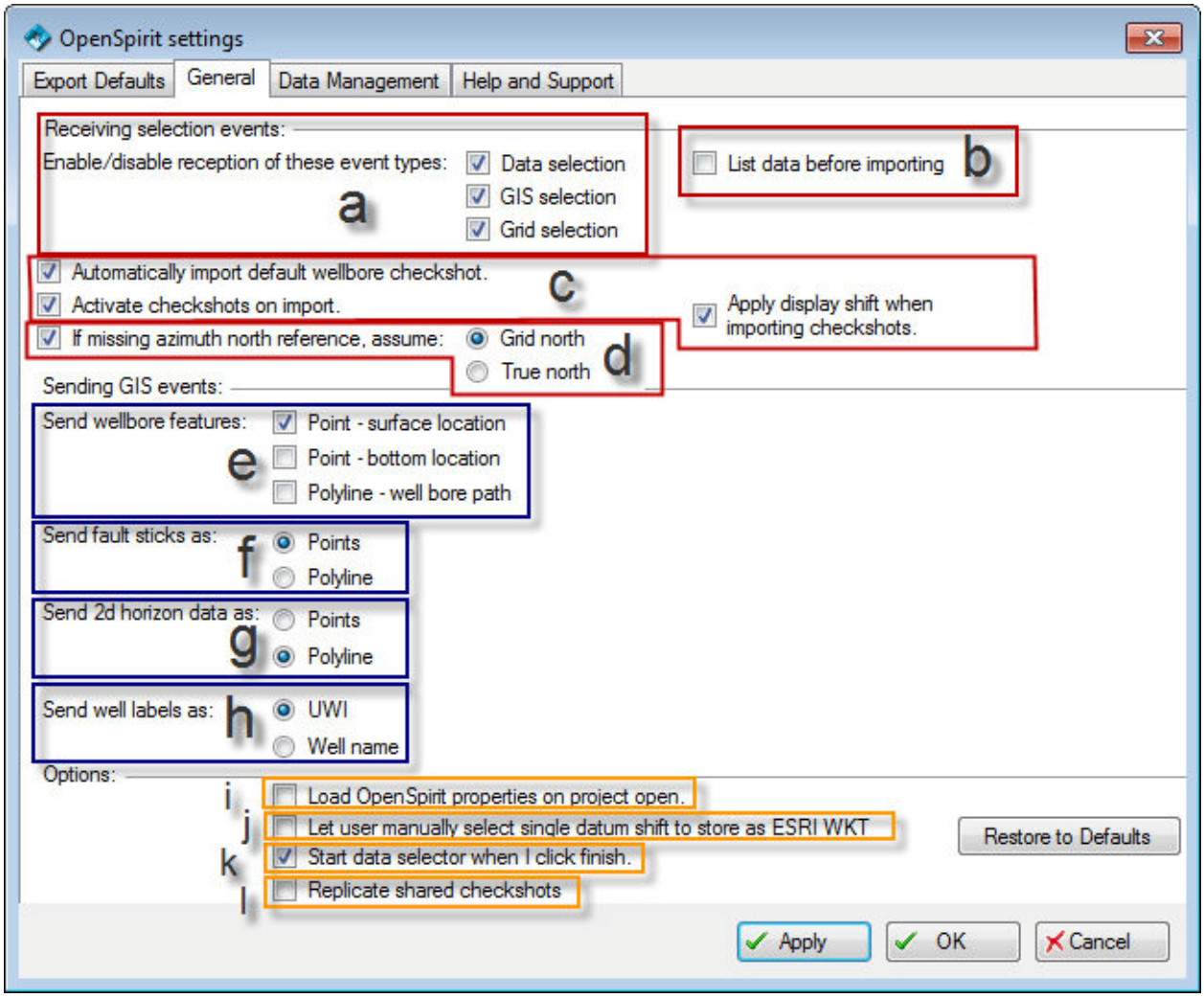
This tab allows you to set the default project that you wish to write well, seismic, or interpretation data to (the "Export to external..." option). If no export projects have been set and you attempt to export data via OpenSpirit, this dialog will be displayed to allow you to choose a export project. The "Save to external..." option ignores the export project settings and saves the Petrel object to the data store associated with its saved *datakey* (the *datakey* established when the Petrel object was last imported or exported via OpenSpirit).

If an interpreter selection is optional, as with OpenWorks, a selection may be made for Well interpreter and/or Interpretation interpreter where appropriate in the dialog.



General Options

This tab has three categories of settings:



Receiving selection events

a. Enable / disable reception of these event types

These checkboxes determine whether these types of events we be listened for. If a checkbox is not checked the corresponding event type will be ignored.

b. List data before importing

If this checkbox is checked then any data whose *datakeys* are received in a *data selection event* will be listed before being imported - regardless of whether it matches existing data in the Petrel project or not. If unchecked (the default) then only data that matches will be displayed and the user given a choice of how to proceed.

c. Checkshot options (see Checkshot Import Options for more details)

- **Automatically import default wellbore checkshot**

If this checkbox is checked (the default) then the default (aka preferred) checkshot, if available, will automatically be imported when a wellbore is imported.

- **Activate checkshots on import**

If this checkbox is not checked (the default) then checkshots will not get activated automatically upon import. They can be activated later by explicitly activating one or many in Petrel. If this checkbox is checked, then checkshots will be automatically activated upon import.

- **Apply display shift when importing checkshots**

If this checkbox is checked (the default) then checkshot times that are to be imported will be shifted by the checkshot Display Shift times. Not all data stores have the concept of a display shift for checkshots (OpenWorks does...), but if the source data has a non-null display shift set and this checkbox is enabled then the time values of the time-depth pairs will be shifted by this amount.

d. If missing azimuth north reference assume:

If this checkbox is not checked (the default) then wellbores that are missing an azimuth north reference for their deviation survey will not be imported. If checked then a missing north reference will be assumed to be either true north (line of longitude) or grid north (line of constant false Easting) based on the radio button choice.

Sending GIS events

e. Send wellbore features:

Enable checkboxes to determine which feature(s) will be sent when a wellbore is selected and a *GIS event* broadcast. Each feature type will be sent in a separate layer.

f. Send fault sticks as:

Choose whether to send Petrel fault polylines as point or polyline features. If sent as points to ArcGIS then the z values may be posted and symbolized by a variable color.

g. Send 2d horizon data as:

Choose whether to send Petrel 2d seismic horizons as point or polyline features. If sent as points to ArcGIS then the z values may be posted and symbolized by a variable color.

h. Send well labels as:

Choose whether to label the well GIS features that will be broadcast with the Petrel well UWI or its name.

Options

i. Load OpenSpirit properties on project open

If checked then the OpenSpirit extended properties will be loaded when the Petrel project is opened. This then allows a user to see these properties in the Petrel object settings dialog without needing to first connect to OpenSpirit. For projects with many objects in it (especially well tops) this may significantly add to the project opening time. The default, box unchecked, is to delay restoring the extended properties until the connection to OpenSpirit is activated.

j. Let user manually select single *datum shift* to store as ESRI WKT

An option for advanced users that applies when a Petrel *CRS* is chosen, via OpenSpirit, from an external project that has a series of datum shifts associated with its project *CRS* (like GeoFrame for NAD27). The ESRI WKT that Petrel stores only allows a single *datum shift* to be set. This option allows the user to manually pick the desired *datum shift*. Otherwise the OpenSpirit adapter will automatically pick a *datum shift*. In any case the full set of datum shifts are stored with the Petrel project and visible via the Coordinate System Details tab on the Petrel project settings dialog.

k. Start data selector when I click finish

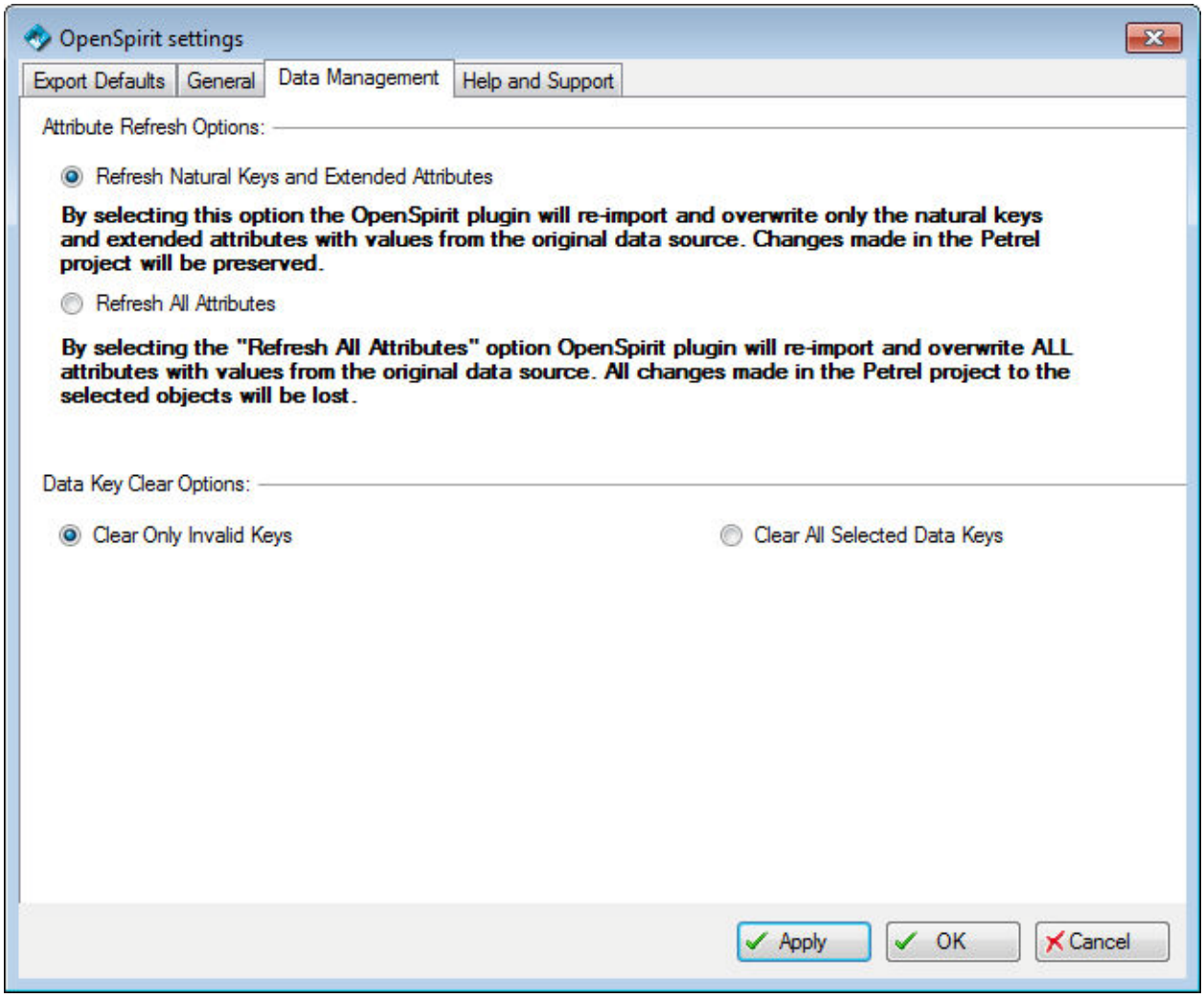
Option to automatically start the OpenSpirit data Selector after the Project Initiation Wizard is finished or after connecting to OpenSpirit from an existing Petrel project. The OpenSpirit adapter will either use an existing or create a new OpenSpirit session called Petrel_*ProjectName* that has its *CRS* and units set to the Petrel project preferences.

l. Replicate shared checkshots

Option to make a copy of a checkshot when an imported well checkshot is shared from another (see Checkshot Import Options for more details) . The default, box unchecked, does not replicate shared checkshots.

Data Management Options

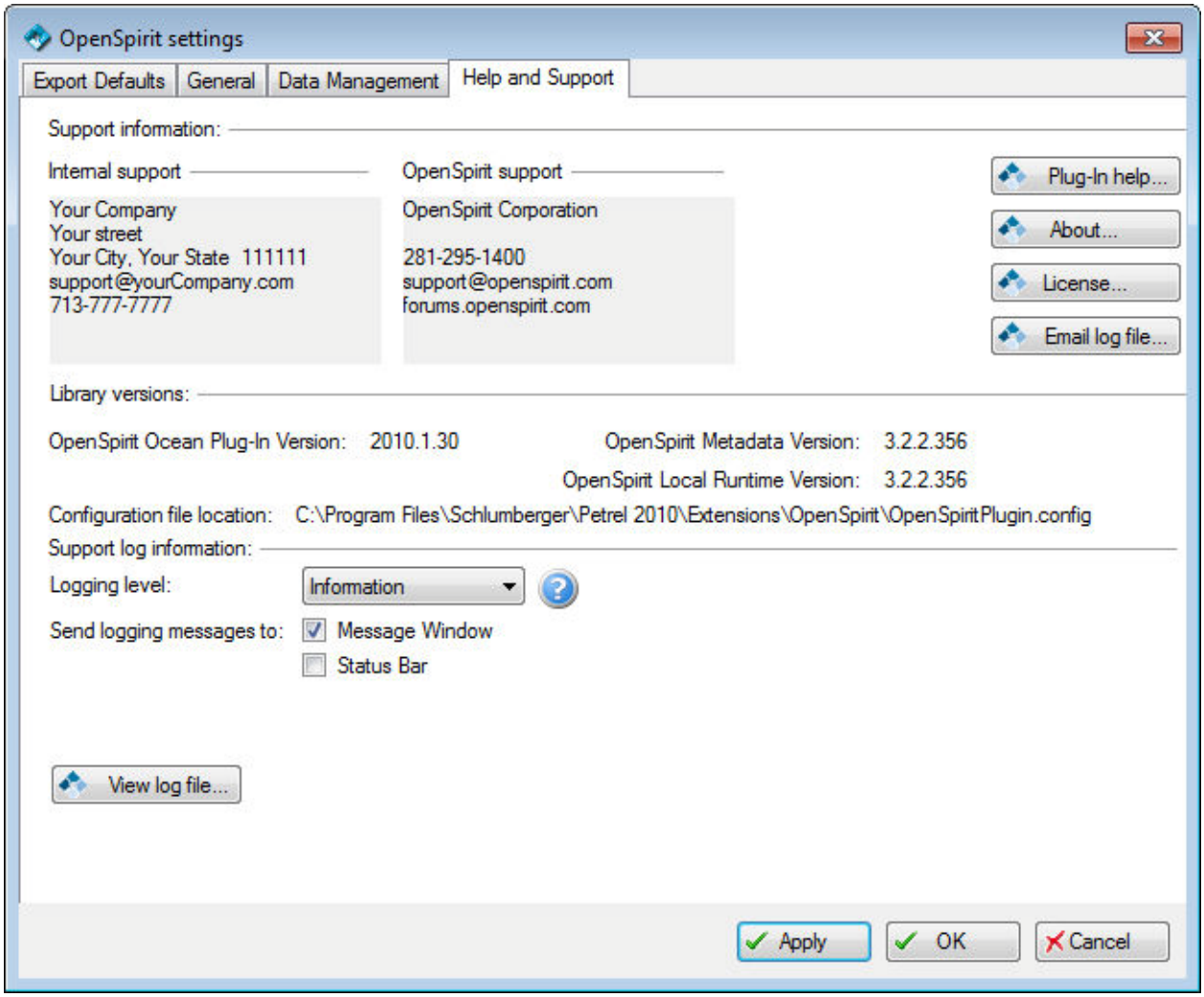
This tab controls the behavior of the OpenSpirit Data Manager.



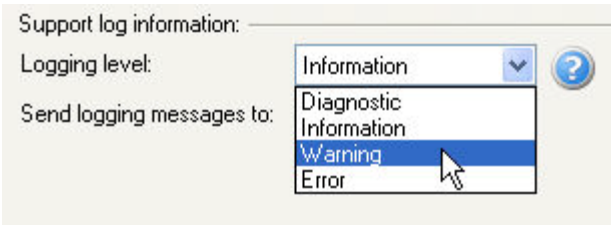
Help and Support Options

This tab gives details of the:

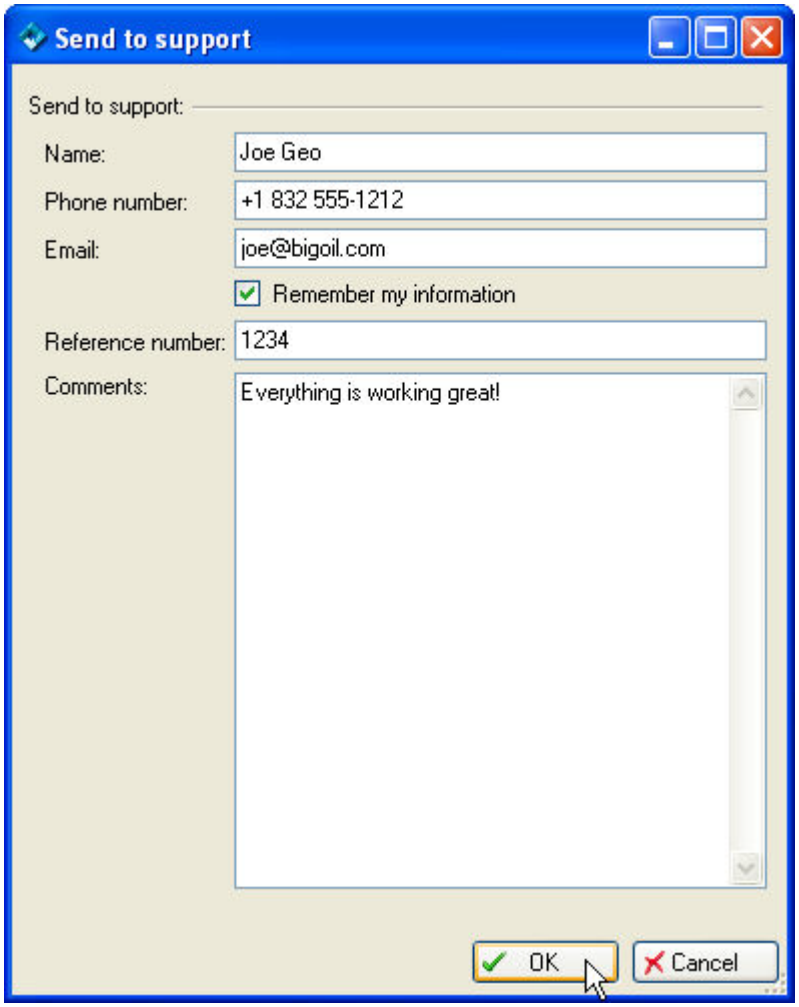
- installed version of the OpenSpirit Ocean *Application Adapter*
- installed version of the OpenSpirit runtime on your PC
- installed version of the OpenSpirit master installation in your site
- location of the configuration file that controls the OpenSpirit adapter behavior



It also allows you to set the desired level of detail for a log file and whether you want messages to be displayed in the Petrel message window and status bar. Note that logging at the "Diagnostic" level of detail can generate a lot of messages and may slow down performance. "Warning" is the default level.



The "Email log file" button brings up this dialog which allows you to put in your contact details and a description of problems . Clicking OK will bring up your default email client with an email message that includes your log file and description of problems. This is a convenient method of posting questions or problems to OpenSpirit support. No email is sent unless you review and manually send it from your email client.


Send to support
Send to support:
Name:
Joe Geo
Phone number:
+1 832 555-1212
Email:
joe@bigoil.com
Remember my information
Reference number:
1234
Comments:
Everything is working great!
OK
Cancel

Configuration Files

Support File

The Support.config file may be found in either its default location in the OpenSpirit directory under the Extensions directory of the Petrel installation directory (e.g. C:\Program Files\Schlumberger\Petrel 2010\Extensions\OpenSpirit) or in the directory specified during the OpenSpirit adapter installation.

This XML file controls :

- The display of your internal support contact for OpenSpirit support
- The display of the OpenSpirit Corp. contact for OpenSpirit support

This information is displayed in the OpenSpirit settings dialog and is used to email support issues to OpenSpirit.

You may edit this file (create a backup first) to add your companies details.

Its default contents are:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
  <Environment>
        <add key="InternalSupport" value="Your Company
            Your street
            Your City, Your State  111111
            support@yourCompany.com
            713-777-7777" />
        <add key="OpenSpiritSupport" value="OpenSpirit Corporation
            281-295-1400
            support@openspirit.com"/>
  </Environment>
  <SupportForm>
        <add key="Remember" value="true"></add>
        <add key="Name" value="Your name"></add>
        <add key="Phone" value="Your phone"></add>
        <add key="Email" value="Your email"></add>
  </SupportForm>
</configuration>
```

Support File

The Support.config file may be found in either its default location in the OpenSpirit directory under the Extensions directory of the Petrel installation directory (e.g. C:\Program

Files\Schlumberger\Petrel 2010\Extensions\OpenSpirit) or in the directory specified during the OpenSpirit adapter installation.

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        <add key="Name" value="Your name"></add>
        <add key="Phone" value="Your phone"></add>
        <add key="Email" value="Your email"></add>
  </SupportForm>
</configuration>
```

Configuration File

The OpenSpiritPlugin.config file may be found in either its default location in the OpenSpirit directory under the Extensions directory of the Petrel installation directory (e.g. C:\Program Files\Schlumberger\Petrel 2010\Extensions\OpenSpirit) or in the directory specified during the OpenSpirit adapter installation.

This XML file controls :

- How the OpenSpirit attributes are mapped to the standard Petrel object attributes
- Which OpenSpirit attributes are imported as custom attributes on the Petrel objects (and then displayed in the Petrel object settings dialog)

- Which attributes for a Petrel object will be used to determine whether a Petrel object is the same as an external data item (i.e. the matching criteria) for both import and export
- Which attributes to export via OpenSpirit
- What display names to use for OpenSpirit attributes and Petrel data types

Editing this file without exercising great care may have undesirable consequences. If you want to change the default configuration please contact the OpenSpirit support team at support@openspirit.com who can help you implement your desired business rules.

Well Symbol Mapping Files

The WellTypesToOpenSpiritWellSymbol.xml and OpenSpiritWellSymbolsToWellType.xml files may be found in either their default location in the OpenSpirit directory under the Extensions directory of the Petrel installation directory (e.g. C:\Program Files\Schlumberger\Petrel 2010\Extensions\OpenSpirit) or in the directory specified during the OpenSpirit adapter installation. These two files are copied from the xml directory of the Petrel installation directory (e.g. C:\Program Files\Schlumberger\Petrel 2010\xml) to the directory specified during the OpenSpirit adapter installation.

These XML files control:

- how well symbols and well types get mapped when importing into Petrel via OpenSpirit
- how well symbols and well types get mapped when exporting from Petrel via OpenSpirit

Editing these files without exercising great care may have undesirable consequences.

Glossary

A

application adapter: A piece of software that allows an application to connect to OpenSpirit in order to read/write data from any data store with an OpenSpirit data connector or to exchange events (messages) with other OpenSpirit enabled applications.

C

CRS: A Coordinate Reference System. In Petrel, a project has a CRS which is a map projection system with a reference geographic system which has an associated datum. In addition, a preferred datum shift to WGS84 is defined.

D

data connector: A piece of software that connects a data store to OpenSpirit to allow applications that connect to OpenSpirit to read/write data from this store.

data selection event: A message passed between applications, via OpenSpirit, that contains datakeys that refer to data in data stores accesible via an OpenSpirit data connector.

datakey: Link that connects a Petrel object (e.g. a well, seismic volume, or horizon) to a data item in an external data store.

datakeys: Links that connect a Petrel object (e.g. a well, seismic volume, or horizon) to a data item in an external data store. Given a datakey OpenSpirit can read or write any updates to/from Petrel.

datum shift: A transformation from one geographic system (and its associated datum) to another. There are different algorithms use to accomplish this transformation including: geocentric translation (3 parameters) Molodensky (5 parameters), Bursa/Wolfe (7 parameters) , and grid based approach such a NADCON or NTv2

G

gis event: A message passed between applications, via OpenSpirit, that contains the geometry. attributes, and CRS of point, polyline, or polygon features that belong to GIS layers. Such messages are normally used to exhange data between applications that is posted as culture data in a basemap.

grid event: A message passed between applications, via OpenSpirit, that contains the grid defintion, grid values, CRS and z units of a grid representing the elevation of a geologic surface or some other attribute defined on a grid. A Petrel surface may be sent as a grid event.

M

MSL: mean sea level

O

OPAA: Ocean Petrel Application Adapter - the Ocean Plug-In that connects to OpenSpirit

S

SRD: A seismic reference datum (SRD) is the elevation (with respect to MSL) at which the seismic travel time equals zero.

Index

6

64-bit 3

A

ArcGIS 67, 68, 91, 99

ArcSDE 91

C

Configuration File 3, 99, 110

Connecting 7, 8, 9, 99

  Existing Project 9

  OpenSpirit 7, 8, 9, 99

Contact 109

  OpenSpirit 109

Coordinate Reference System . 7, 8, 19, 27

Coordinate System Details 99

CRS Choice 19, 27

Cursor Tracking 96

D

Data Selection Event 39, 49, 91, 99

Data Selections 39, 49, 91, 99

Data Selector 39, 49, 91, 99

Data Selector Tab Name 39, 49

DisplayShift 99

Drag and Drop 39, 49

E

EPSG 19, 27

ESRI WKT 99

ESRI's ArcMap 1, 96

Export Defaults 99

Export Overview 67, 68

Export to external... .. 1, 3, 19, 27, 38, 61, 67, 68, 99, 110

G

GeoFrame 19, 27, 67, 68, 99

  NAD27 99

GIS Integration 91

I

Import Overview 39, 49

Installation Steps 3

M

Map windows 96

Match and Merge 1, 59

Merge Rules 1

O

OpenSpirit EPSG list 19, 27

OpenSpirit Session 19, 27, 99

OpenSpirit Session CRS 19, 27

OpenSpirit Settings 39, 49, 61, 99, 109

OpenSpirit support 99, 109

  support contact 109

OpenSpirit tool bar 3

Options 19, 27, 39, 49, 61, 67, 68, 99

  Importing 39, 49

  Listening 99

P

Prerequisites 3

Processes window 96

Project CRS 19, 27, 39, 49, 99

Project Initiation Wizard 19, 27, 38, 99

Project SRD 38

Project Units 36

R

Receive GIS 1, 39, 49, 91

Received Event Type 39, 49

Refresh from external... 61

S

Save to external... ..... 67, 68, 99

SDE 39, 49, 91

Seismic Reference Datum 7, 8, 38

Seismic Time Adjustments 62

Send GIS 91

Setting 19, 27, 36, 38

  Project CRS 19, 27

  Project SRD 38

  Project Units 36

Settings dialog.....39, 49, 99, 110
SRD..... 7, 8, 38, 39, 49
Support contact 109
OpenSpirit support 109
Support File..... 109
Synchronization 39, 49
U
Units dialog 36