Completion Services

User Manual

CSD - Completion String Design

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1 CSD USER MANUAL

1.1 Introduction

CSD - Completion String Design, is an advanced Norwegian made software solution for the design and presentation of completion strings and well history tracking. CSD allows you to quickly and accurately create a well schematic, and provides the engineers and staff with a comprehensive set of tools for planning and implementing completions and well interventions!

The software is used to document the planning, operation and as built phases during well completion, intervention and well maintenance activities.

BENEFITS:

- Build Single, Dual and Multilateral completions
- Well Schematic diagrams – onshore / offshore wells
- Drag & drop completion elements for string construction
- Built in equipment symbol package
- Default equipment database (usually extended and customized during the use of CSD)
- String inside string functionality
- ESP solutions
- 3D well trajectory visualization and TVD calculations from survey data
- Completion data export / import / integration
- Revision control / well history / approve, finalize and lock completion drawing
- Customizable Excel reports
- Real time well schematics QA verification / Check List

Completions Services acknowledge the importance of gathering all your well documentation in one place for easy access, easy retrieval and easy update. CSD offers intuitive visualization and reporting, as well as real time quality assurance and information sharing and protection tools!

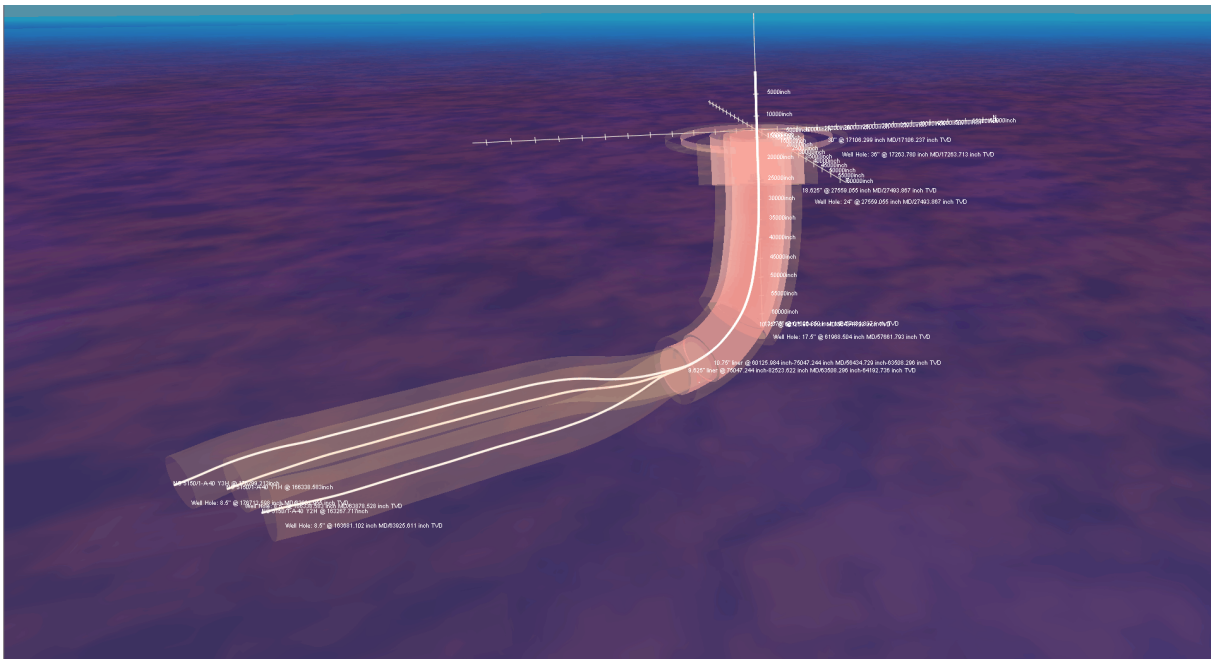
The purpose of this user guide is to help users of CSD to get started using the application.
This manual give insights on how the application works and how to use it.

All data; both equipment data and completion sketches, used as examples in this manual are fictitious.

Some of the abbreviations used in this user guide:

- TD - Total Depth
- MD - Measured Depth
- TVD - True Vertical Depth
- PBTD - Plug Back Total Depth
- MSL - Mean Sea Level

- GL - Ground Level
- RKB - Rotary Kelly Bushing



1.1.1 General Information

CSD is an application that can run under Microsoft® Windows XP, Microsoft® Windows Vista, Microsoft® Windows 7, Microsoft® Windows 8, Microsoft® Windows 10, Microsoft® Windows 11 and Apple® Mac OS X.

More information about standard Windows functionality can be found in the Microsoft Windows user manual.

1.1.2 The CSD Concept

CSD is an application where you can make use of an equipment database and free text symbols to build up the schematics for the completion string, and keep track of the well history.

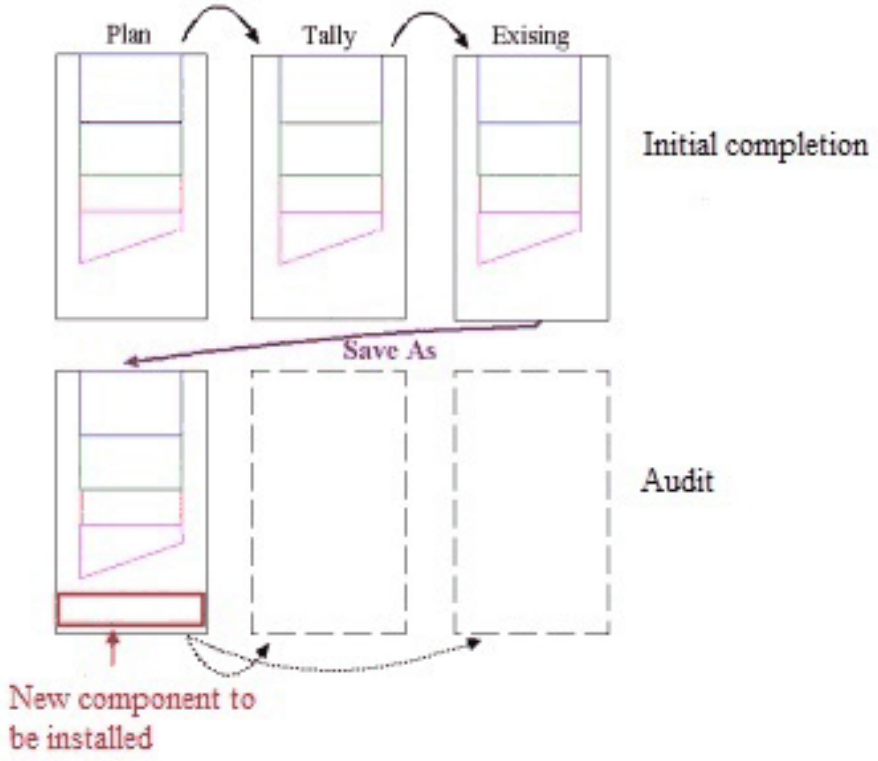
Each component has a number, which is a key in the database. This is called Part Number (also referred to as Commodity number). One component with one Part Number can be installed in several completions. Part Number must not be confused with Serial Number (Serial Number is a unique number that identifies one specific component in one specific well completion).

CSD initially comes with a default equipment database (must be maintained and extended), as well as an set of free text symbols. This allows you to immediately start building the string. If you need parts added to the equipment database, this is taken care of by your System Administrator.

The user can work in different modes:

- Plan - Planning phase
- Tally - Completion phase (Optional)

- Existing /Actual - As installed
- P&A - Plug and Abandon



Plan mode:

The user builds the string in **Plan** mode. The tubing sections will be displayed as one symbol with one total length.

Tally mode (Optional):

The user can go from Plan to **Tally** mode. Then the tubing joints will be shown individually. Each joint length and tag joint number can be registered. Number of joints in each tubing section is calculated using the total length of the section and the average length of each joint. In this mode it is also possible to register equipment Serial Number.

Existing / Actual mode:

NOTE: One can choose to go directly from Plan mode to Existing / Actual mode without creating a Tally mode.

Then the user goes to **Existing / Actual** mode, which is the final and official version of the completion (as installed mode).
All modes are stored in the database and can be opened when the user desires to do so.

When **workovers/interventions** are carried out, always use the last revision of the Existing / Actual version as a base for the new Plan drawing. Then update the drawing and take it to Existing / Actual mode.

Revisions are necessary to keep track of the history of each well. The initial completion has revision number 1.00. The revision numbering is split into two categories:

1. Minor workovers: Setting of plugs, insert valves, re-perforation etc. The revision number will increase with 0.01. So the first minor workover overhaul should get the revision number 1.01.

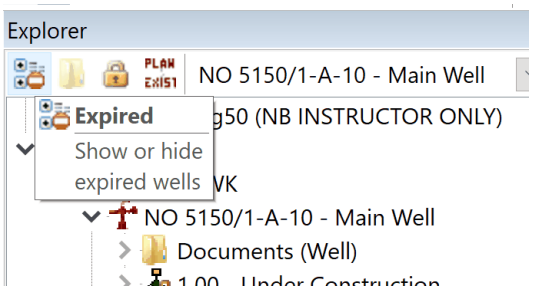
2. Major workovers: Replacement of the complete tubing. Revision number will increase by a whole number. So the first major overhaul should get version number 2.0.

NOTE: This is suggested revision numbering. Each company defines for itself what is considered a minor or a major workover.

P&A mode:

When set to P&A mode, the well drawing should illustrate the pulled upper completion and sat plugs.

NOTE: Remember to set an **Expiry date** on the P&A well, to hide it from the Explorer tab unless the "Show or hide expired wells" button is clicked.

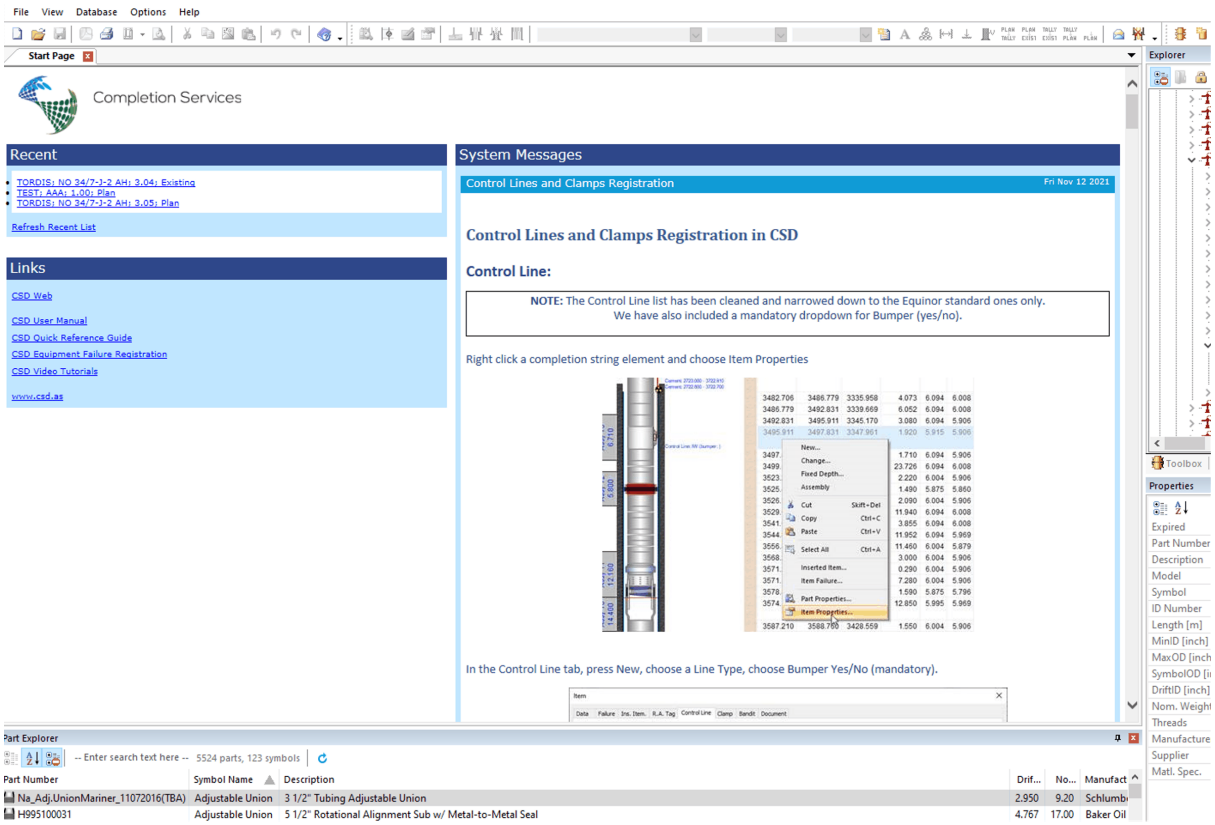


1.1.3 Log On

Double clicking on the CSD icon starts CSD. Where this icon is located varies. If you cannot find the icon, you must get in touch with your IT department.

CSD starts, and the equipment database, symbols and Part/Fields information will be loaded into the machine memory. There is a progress bar for this in the bottom left corner (in the status bar).

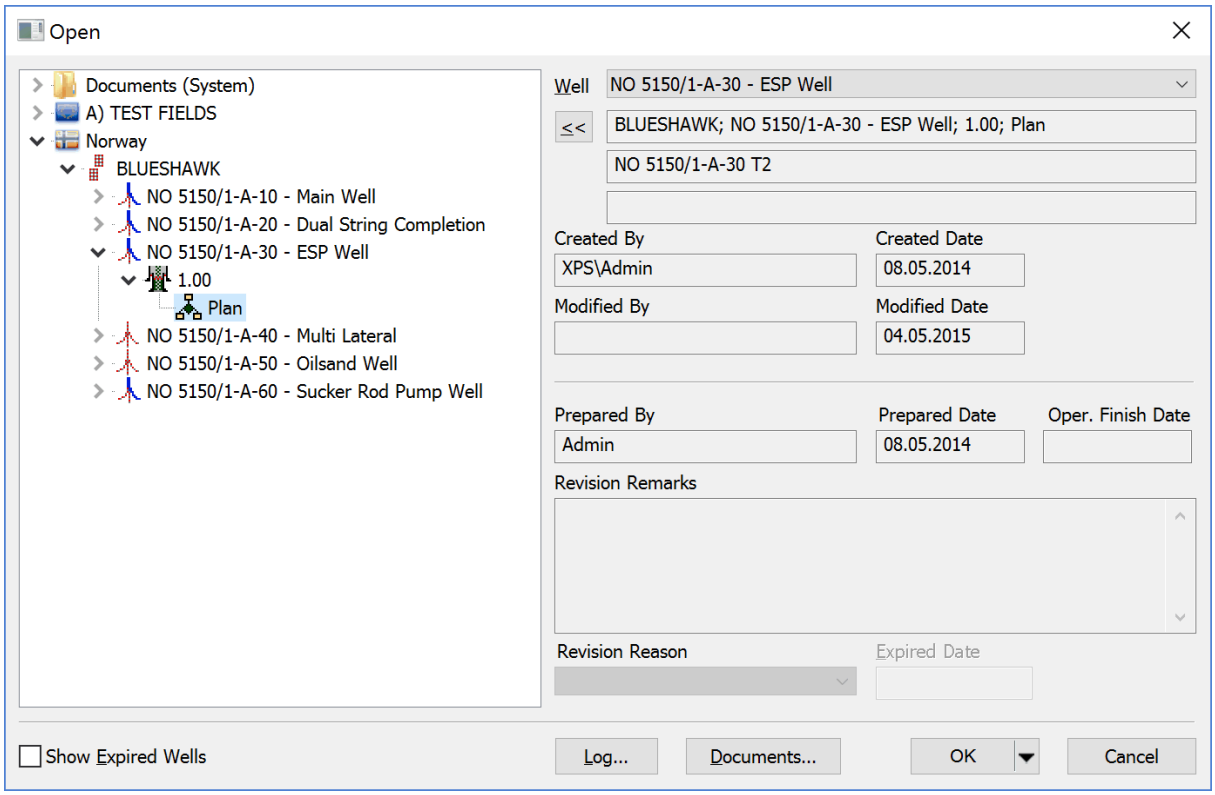
CSD shows a default Start Page, containing system messages, recent files, links to manuals and user documents etc. This page is customized for each company.



1.2 Open a Completion

As a user, you have the possibility to open and look at existing completions. One of the most basic functions in CSD, is to open an already existing completion. Choose File, Open or push this button  . This brings you into the CSD Open dialog.

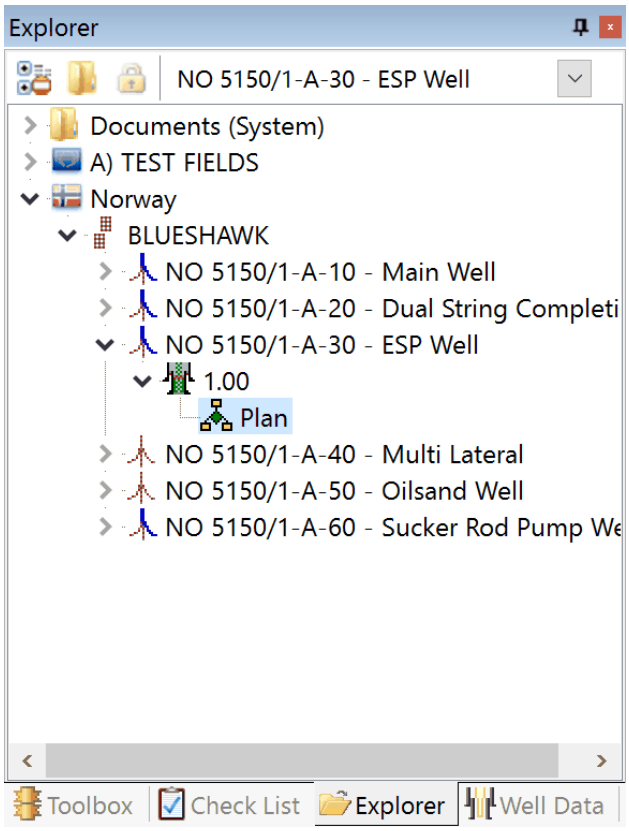
CSD remembers last completion used, and will automatically suggest this one.



Choose Field, Well, Revision Number and Mode. Remember that the official version is located in the last revision number in Existing / Actual mode.

If you are going to open an official version of a completion, this can be easily done by pressing the OK button after you have highlighted a well name. Then the program will open the latest revision of the latest completion in Existing / Actual mode, if it exists.

It is also possible to open wells from the Explorer tab in the CSD main screen. This is done by double click on a schematic revision, or right click and choose Open (Open read only.

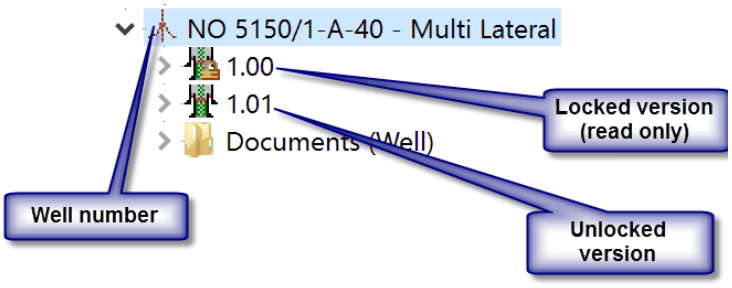


Tip! If this is not visible in your screen, please go to the CSD top menu: View, Toolbars and Docking Windows and choose Explorer.

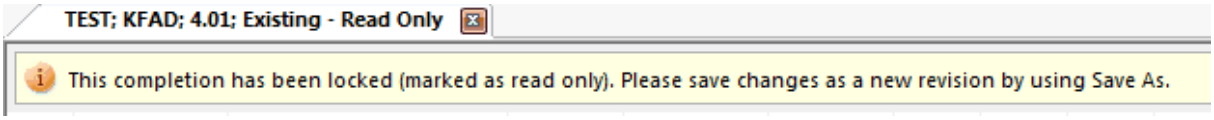
1.2.1 Set Read Only

NOTE: If a schematic revision is set to 'Read Only', it can only be unlocked by the person locking it in the first place, or by a System Administrator.

If the completion schematic is set to Read Only, the revision icon will include a padlock symbol:



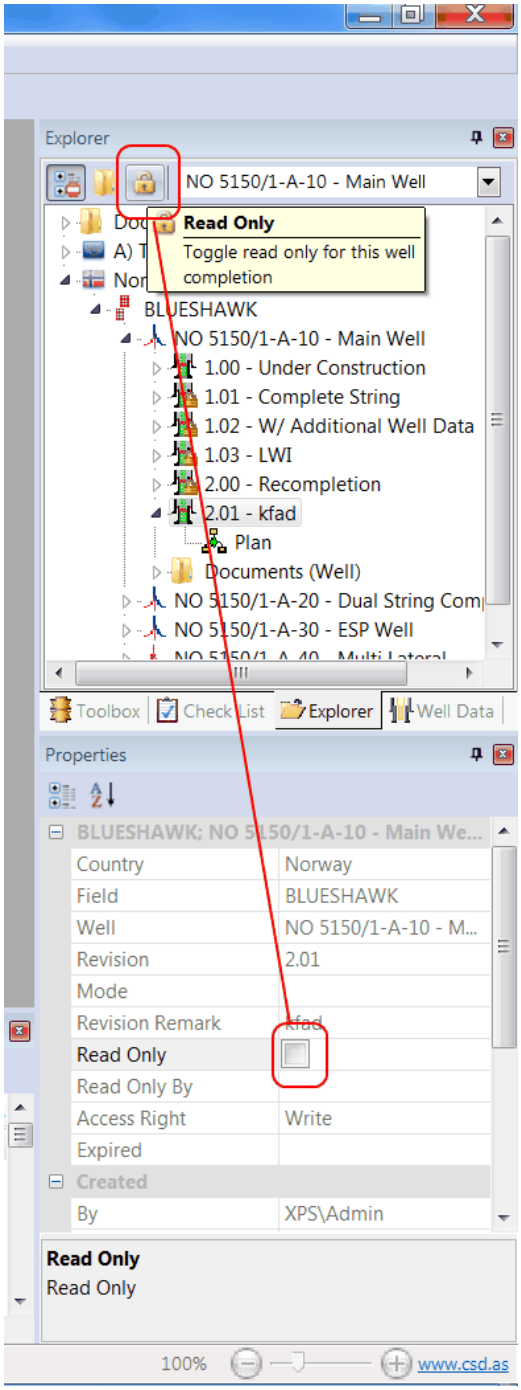
Whenever you open a Read-Only revision, the information bar will show at the top:



How to set a revision to Read Only:

In the Explorer dialog; highlight a well **revision number; i.e. "2.01"**. Then click on the padlock icon at the top, to set it to Read Only. Alternatively you can set the Read Only flag in the Properties dialog, again by first marking the revision number.

NOTE: When you lock a completion revision; you lock all the underlying modes (I.e. Plan, Tally, Existing / Actual & P&A).



FAQ: Who can set and remove revisions as read only?

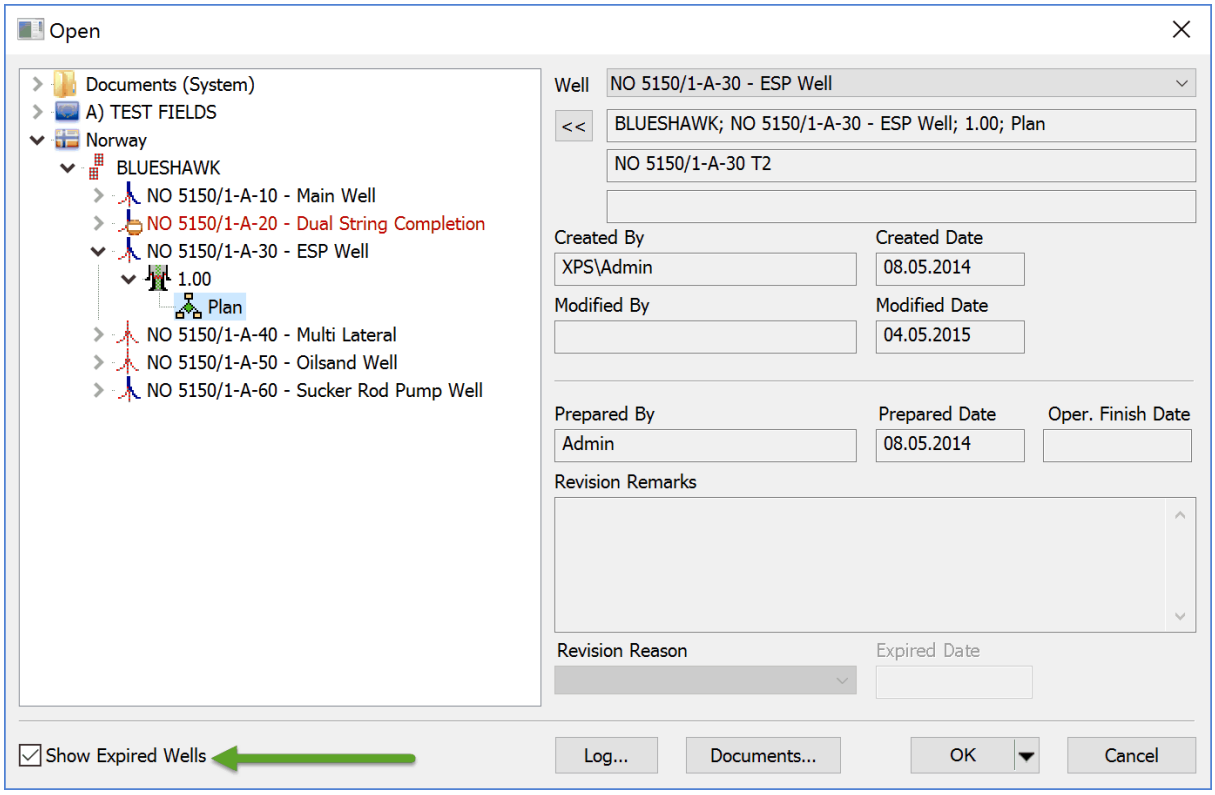
SCENARIO:	**ABLE TO SET/REMOVE AS READ ONLY?**
Users with read access only	no
User (with write/admin access) creates revision, but other user set it to read only:	
- User who created the revision	no
- User who set it to read only	yes
Admin sets revision to read only:	
- Other user with write access to same field	no
- User loses admin rights, but has write access to field	yes
- User loses admin rights, and write access to field	no
User with write access to field, sets revision to read only:	
- Other user with write access to same field	no
- User loses write access to field	no

Summary:

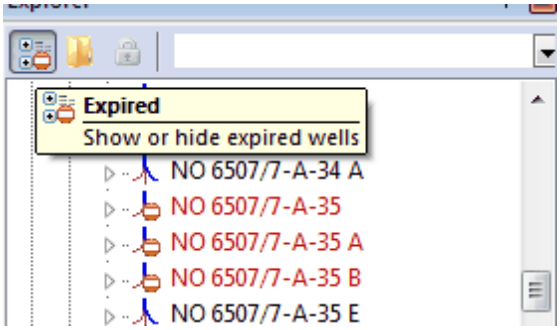
Only admin and the user who set the revision to read only, can remove the read only flag, given that they still have write access to the specific field. Whether or not the user created the revision does not matter.

1.2.2 Show Expired Wells

If you select "Show Expired Wells" at the lower left in the Open dialog, or pressing the Expired button in Explorer, you will see the wells that have been marked expired. These are shown in red, as in the figures below.

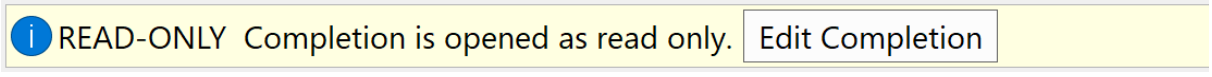


It is also possible to open and view expired wells from the Explorer tab.



1.2.3 Open as Read Only

A well completion opens as Read Only by default.This allows another user to work on the completion drawing without you locking it.
To be able to edit the completion drawing; push the Edit Completion button on the yellow information bar:



Although the completion is set to ‘Read Only’, it is possible to save the completion as a new revision or a new completion.

Tip! You can use the MRU (Most Recently Used) list in the file menu to open completions. This list contains the completions that where opened recently.

FAQ/Troubleshooting

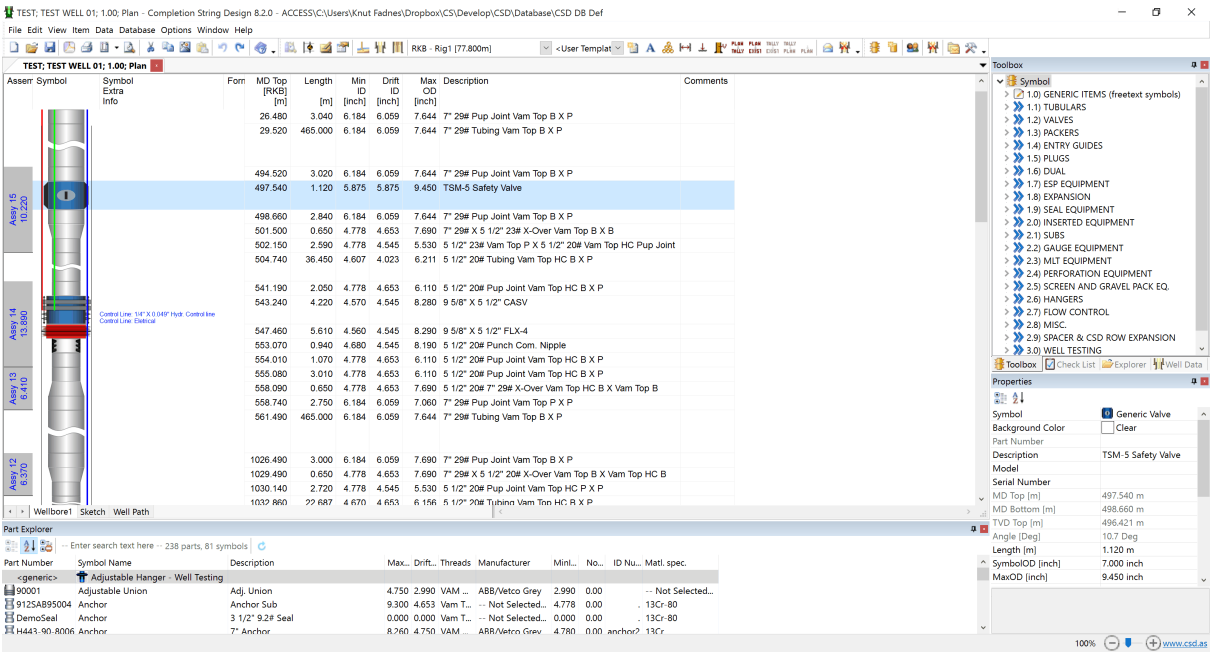
Q I want to open a completion but I get a message saying Completion is locked by “name”. What does it mean?

A This indicates that the completion is already opened by another user, and you won’t be able to save any changes you do. Get in touch with the person who is specified in the message, or ask your CSD administrator.

1.3 CSD Main Screen

The figure below shows CSD main-screen, default setup.

NOTE: If you want to place two open well completion drawings next to each other for comparison, drag one of the well-header tabs into the canvas and drop it. To reverse it, drag the header into the other completion drawing window.

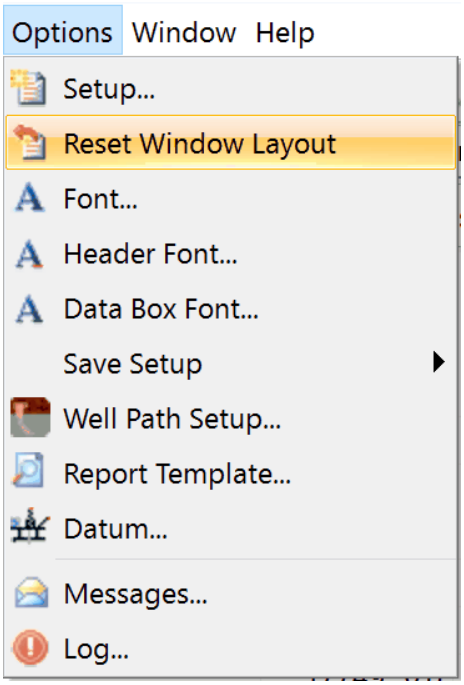


CSD shows completion schematic in tabs. The Schematic window itself contains 3 standard tabs found at the bottom of the schematic window:

1. Schematic
2. Sketch
3. Well Path (Usually disabled on Citrix / Terminal Server)

NOTE: The well trajectory is visible after survey data has been imported.

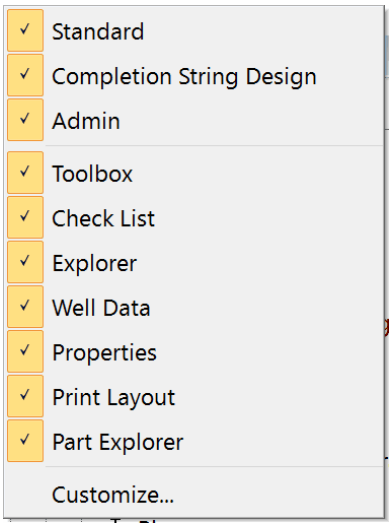
Tip! If you want the window settings back to the default setup, go to Options, Reset Window Layout.



1.3.1 Context Menues

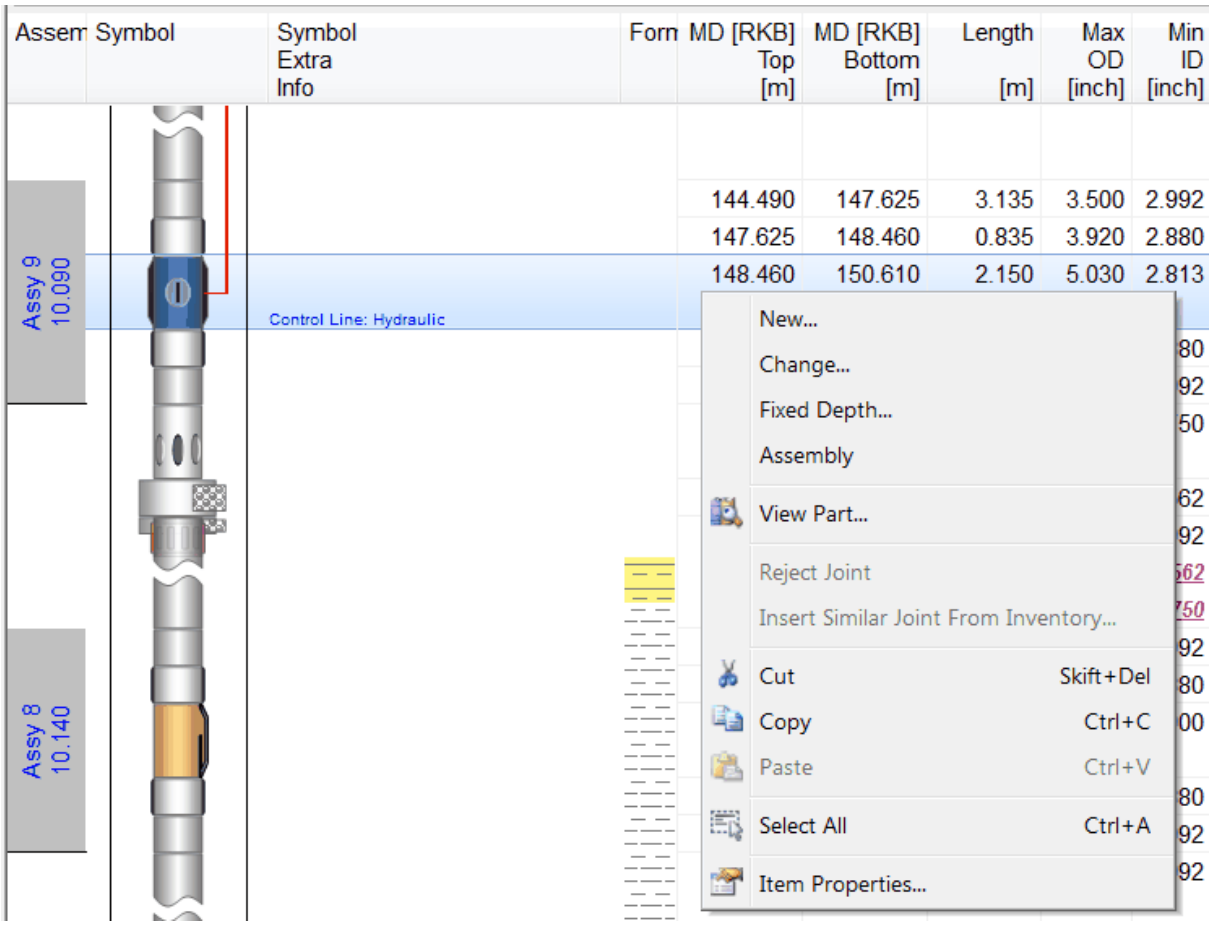
Introduction

The context menus appear when the right mouse button is clicked. The menus change depending on where your mouse cursor is located. When right-clicking a toolbar, the menu could look like this:



Schematic

The following menu is shown when you right click a selected element in the Schematic window:



New... Add a new part in the well schematic. First choose a symbol in the Toolbox. Then press New... The mouse pointer gets a plus sign next to it. Click to insert the part at the desired location in the schematic grid. This is applicable for both Database Equipment and Generic Items.

Tip! If you enter an item at the wrong location; use left mouse-button drag and drop, to to move and place the item below the appearing dotted line.

Change... Change / replace an item in the grid. If it is a database part; the Part, Search dialog opens. Choose another part and press OK to change. If the selected Item is a Generic Item, the Item Properties dialog will show, allowing you to change the details of the freetext item (non database part).

Fixed Depth... Lock an element to a specific depth.

Assembly... Mark one or several elements in the Schematic grid to form an assembly.

View Part... View part information for a selected **database part**. Inactive for Generic Items.

Reject Joint Removing inventory joint from Tally.

Insert Similar Joint From Inventory... Insert inventory joint to Tally.

Cut (Shift+Del) Cut and remove the item from the grid.

Copy (Ctrl+C) Copy an item.

Paste (Ctrl+V) Paste an item.

Select All (Ctrl+A) Select all items in the grid.

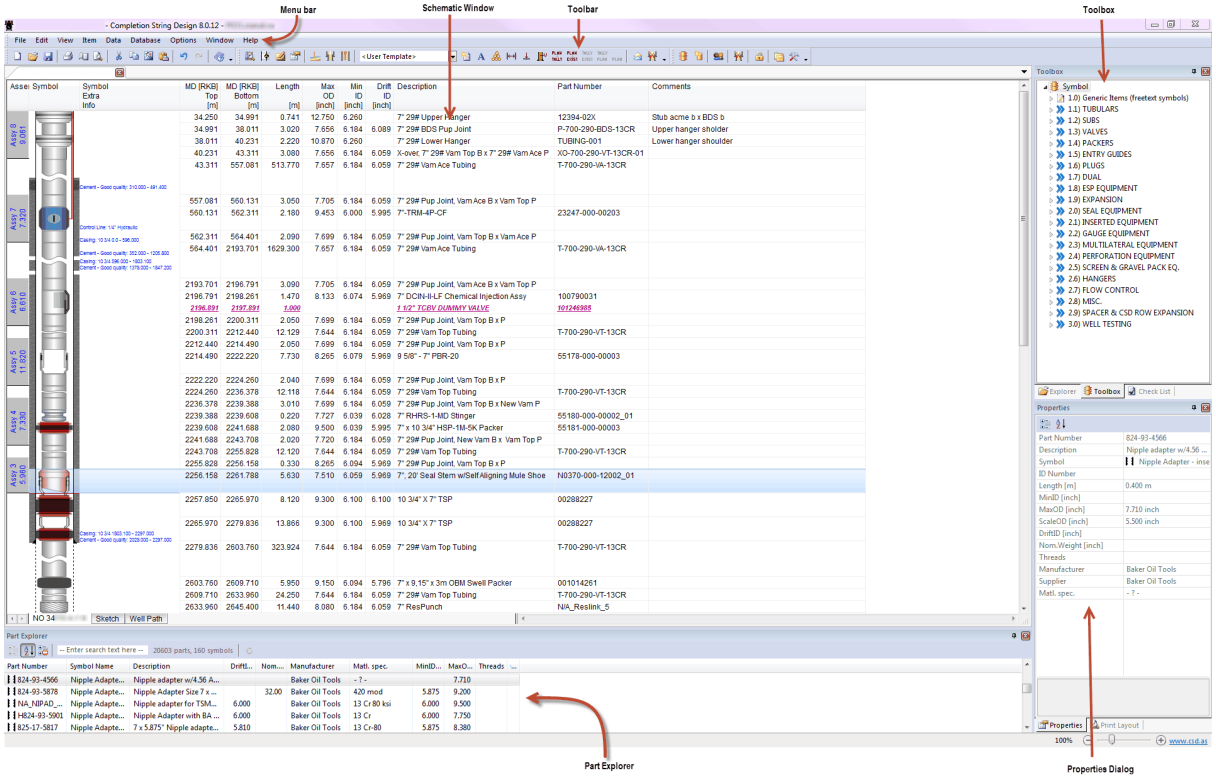
Item Properties... Opens the Item Properties dialog for the selected element.

NOTE: If more than one element is selected simultaneously, some of the menu items might be deactivated.

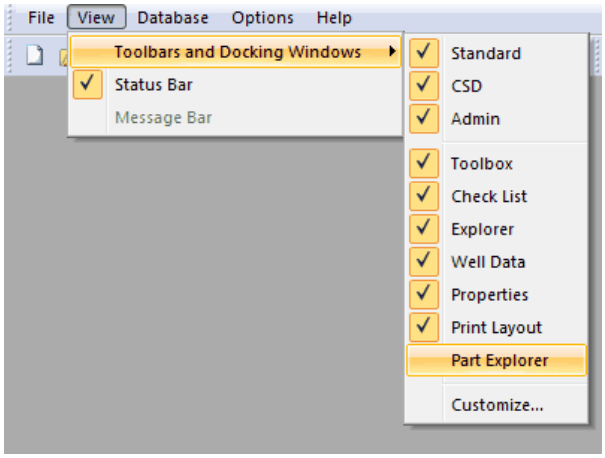
1.3.2 Schematic

When creating the well schematic, you will mostly work in the Schematic window.

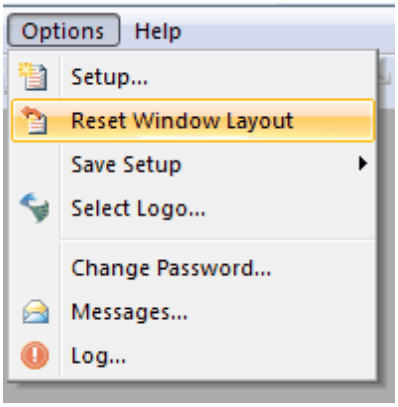
An example of how a schematic screen looks like (default setting):



To enable and disable docking windows; go to View, Toolbars and Docking Windows:



Reset to default windows and positioning; choose Options, Reset Windows Layout:



Columns

It's important to be able to format the Schematic to get a nice print out. Here is a summary of what you can do with the columns:

- **Change the order of the columns:**
  Place the mouse pointer on the column header cell. Hold down the left mouse button while moving the cursor to the border of the area (the cursor will have a square next to it). Drag the columns to the desired position. A dotted line will show you where the columns will be inserted. Then release the mouse button.

- **Scale columns:**
  Place the cursor on the border of the column. Hold down the left mouse button and re-size the width of the column by dragging. A column can be automatically adjusted by double clicking on the column left vertical border.

Tip! Scale all columns automatically by choosing Data, Adjust Column Widths. The Symbol- and Assembly column will not be affected.

NOTE: The column width is automatically adjusted when you open a completion.

To add or remove Schematic columns, go to Options, Setup, Wellbore Schematic Columns.

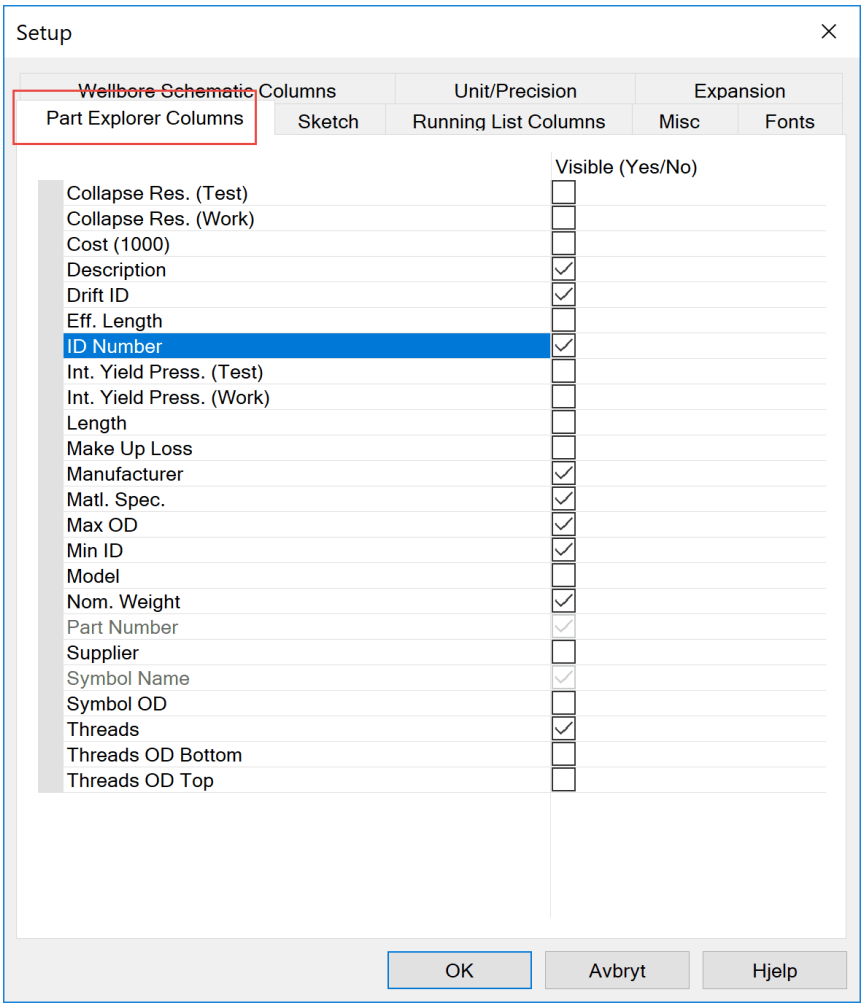
1.3.2.1 Part Explorer

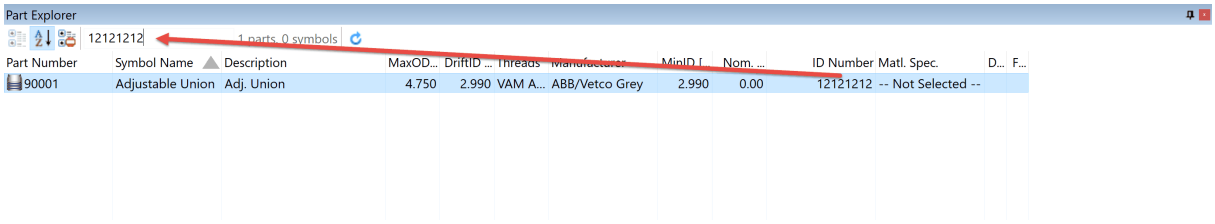
The Part Explorer gives you an easy access to search for the part you are looking for. Simply type in some of the part information in the search field, such as part number, symbol name, part description etc. The search list narrows the selection as you type. When the correct part is found; you can drag it into a well schematic, holding down the left mouse-button, release and insert below the appearing dotted line.

In this window it is possible to change the sort order. To do this, click the column you want to sort by. The first time the column is clicked the list is sorted in ascending order, the next time the list is sorted in descending order.

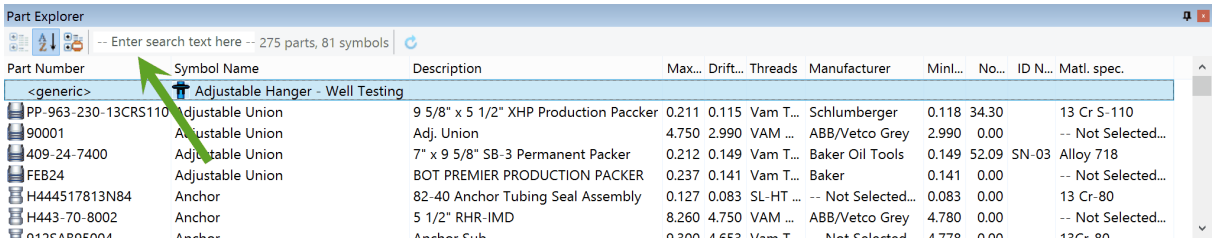
TIP: You can add / remove Part Explorer searchable columns by going to the CSD top menu, Options, Setup, and choose the tab Part Explorer Columns. If you add i.e. the ID Number column,

then this is also searchable.





NOTE: If you auto hide the Part Explorer, it may prevent you to drag an element to the bottom of the string. In this case you should dock it again, clicking the small pin at the upper right.

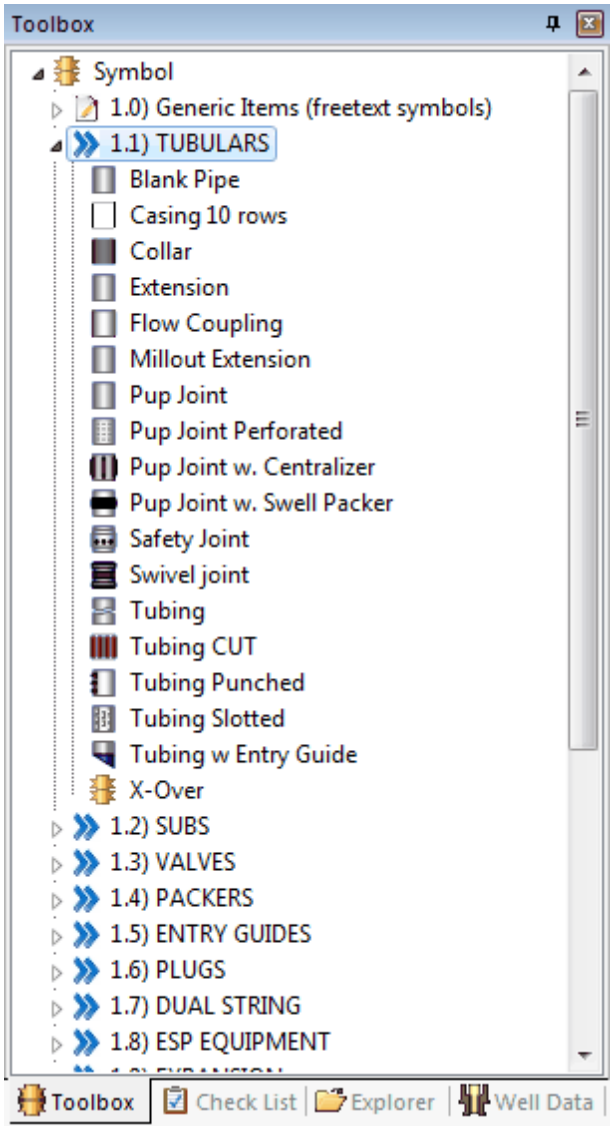


Tip! If the Part Explorer is missing in the Schematic window; go to View, Toolbars and Docking Window and select Part Explorer.

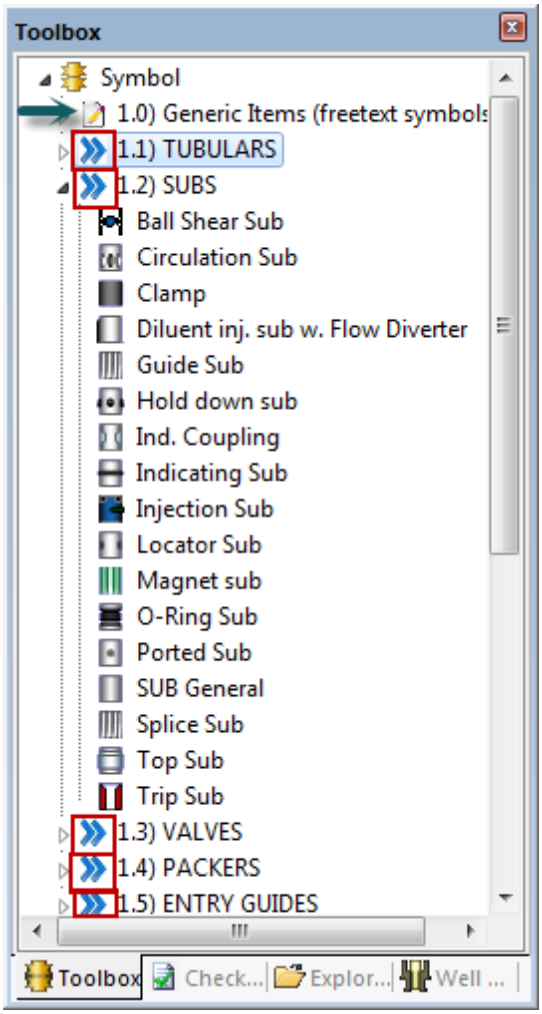
1.3.2.2 Toolbox in Schematic mode

The toolbox shows available symbols to be used in CSD. Please note that the symbols usually are arranged in several levels. For instance can the group symbol "TUBULARS" contain "Pup Joint", "Tubing" and so forth.

The toolbox is by default docked to the main window's right side. It can also be floating and placed anywhere on the work space. This is also the case for tabs like Explorer, Check List and Well Data.



The symbols under the blue arrows are symbols belonging to parts registered in the equipment database, but there are also a category of Generic Items (freetext symbols).



Tip! If the Toolbox is missing, go to View, Toolbars and Docking Window and select Toolbox for this to appear in the main screen.

1.3.2.3 Check List

The Check List function is a tool helping the user to check that the well schematic is done correctly. It consists of both manual and automated check list items that must be completed before taking a well schematic to the Existing / Actual mode. The check list is also useful to identify errors that could have existed in the original drawings/papers.

NOTE: When saving a Plan or Tally mode to Existing / Actual, the user must first complete the Check List.

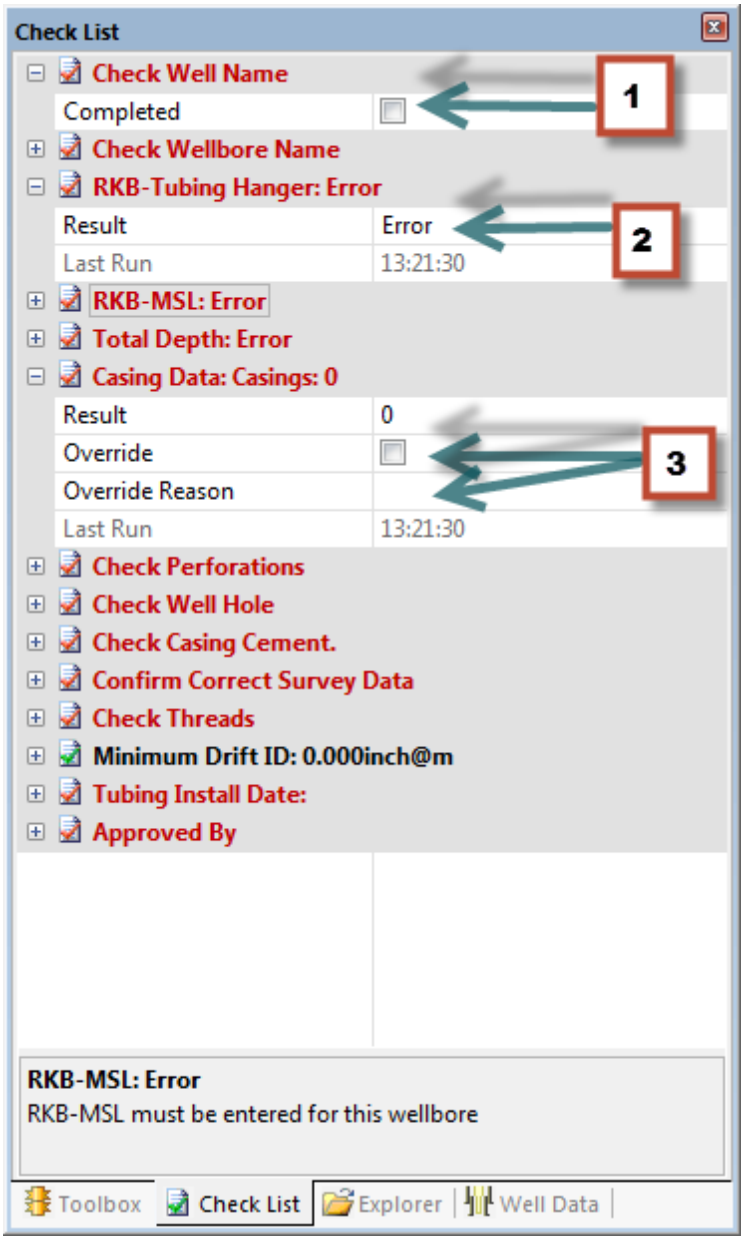


FIG 1: Check List Tab

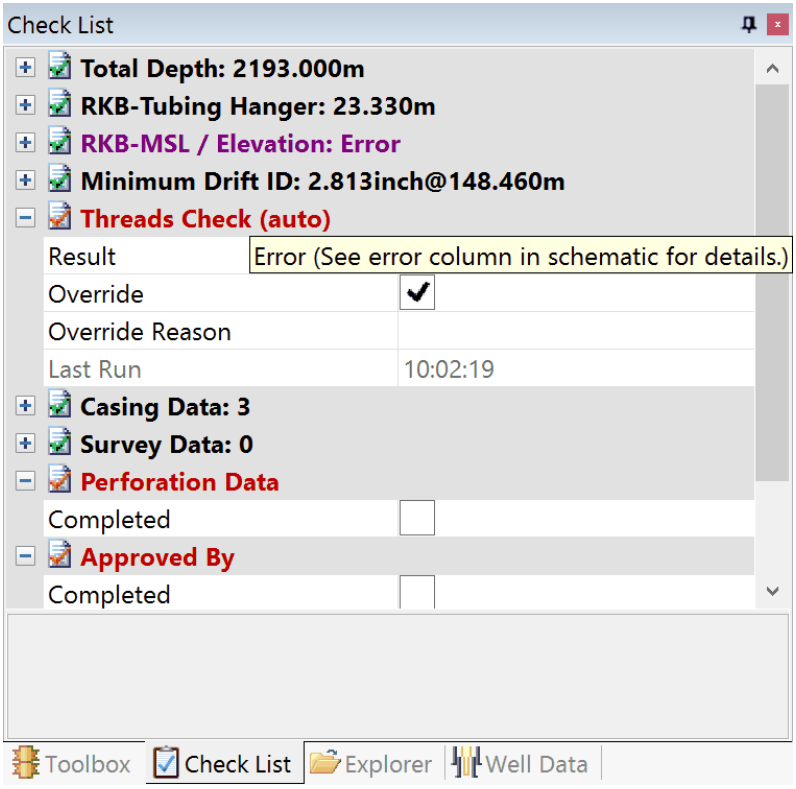


FIG 2: Automated Check List

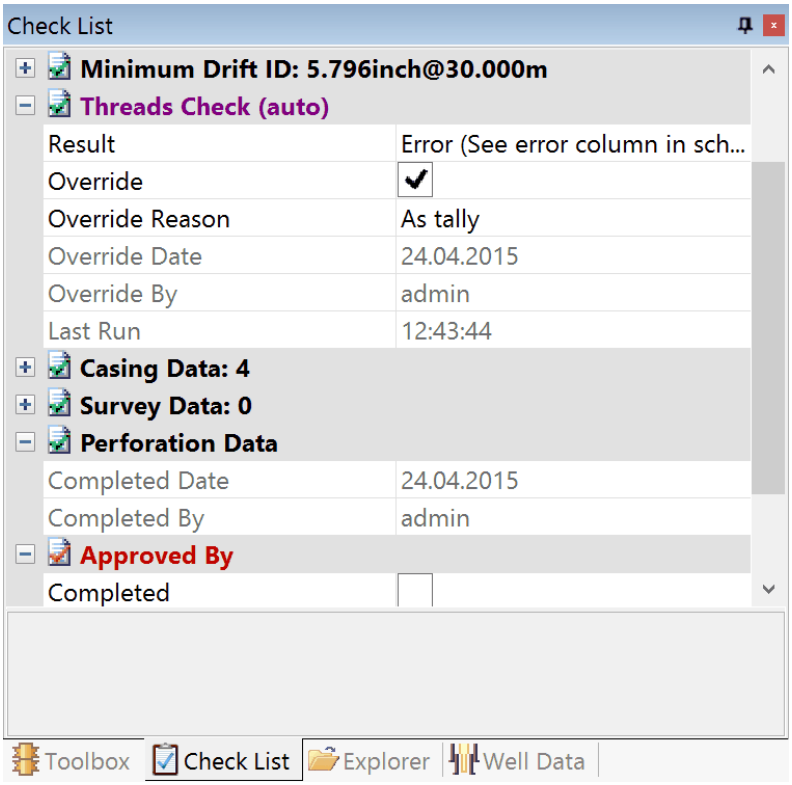


FIG 3: Threads Check is overridden

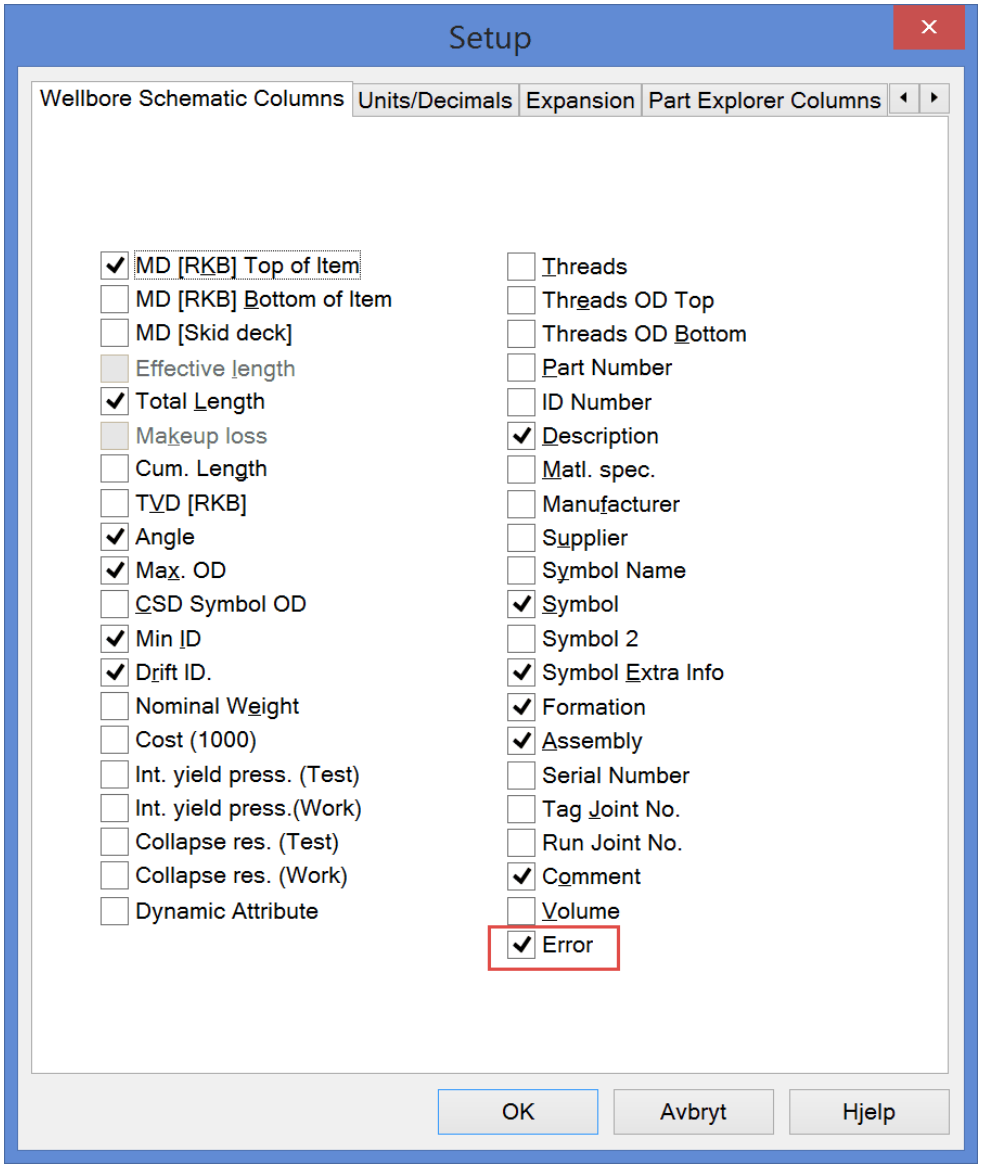


FIG 4: To show the Error column in wellbore schematic: Go to Options, Setup..., Wellbore Schematic Columns

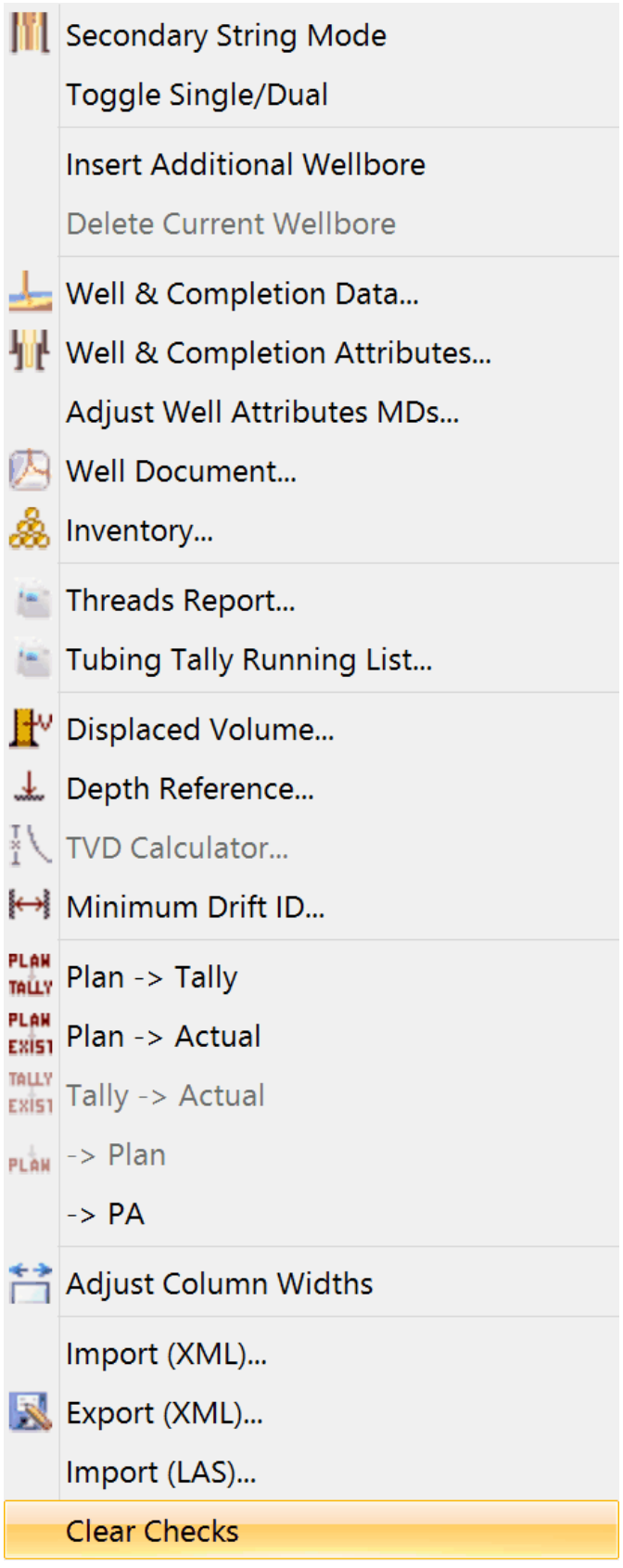

Secondary String Mode
Toggle Single/Dual
Insert Additional Wellbore
Delete Current Wellbore
Well & Completion Data...
Well & Completion Attributes...
Adjust Well Attributes MDs...
Well Document...
Inventory...
Threads Report...
Tubing Tally Running List...
Displaced Volume...
Depth Reference...
TVD Calculator...
Minimum Drift ID...
PLAN TALLY
Plan -> Tally
PLAN EXIST
Plan -> Actual
TALLY EXIST
Tally -> Actual
PLAN
-> Plan
-> PA
Adjust Column Widths
Import (XML)...
Export (XML)...
Import (LAS)...
Clear Checks

FIG 5: Clearing the Check List

In the check list, there are 3 alternatives:

1. Confirm that the topic is completed by checking the box. The topic text will then change from red to black.
2. The topic itself will appear in red if data is missing or faulty, and change to black when the data is entered or corrected.
3. The topic is not correct, but you have the option to correct the data, or override by entering a comment and press Enter. The topic will then change from red to purple.

Tip! To clear the Check List and start over; go to Data, Clear Checks.

NOTE: It is possible to customize this list according to customer needs, so the Check List items can vary slightly from the list below.

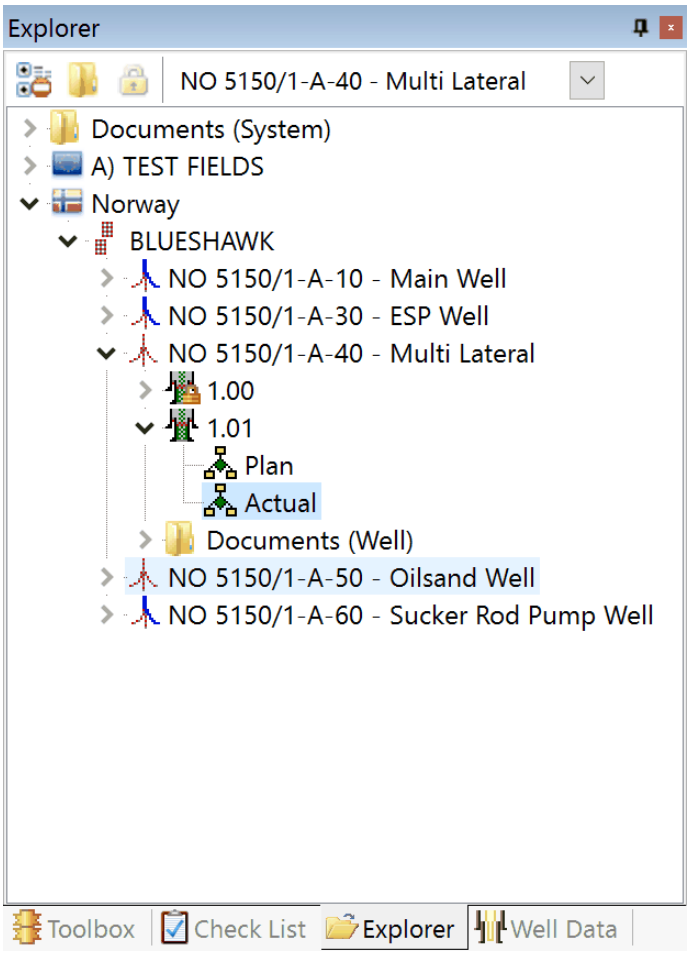
Topic	Description
Check Well Name	Make sure that the well name is correct.
Check Wellbore Name	Make sure that the wellbore name is corrected. Wellbore name is located in Well & Completion Data, General Data.
RKB-Tubing Hanger	Checks that the RKB-TH (Landing point / shoulder) value current wellbore is correct. This is found in Well & Completion Data, Depths. It is calculated based on RKB-MSL (Air Gap) and MSL-TH (entered in Datum).
RKB-MSL (Airgap)	Checks that the RKB-MSL value is correct for the wellbore.
MSL – Tubing Hanger	Check MSL-Tubing Hanger value. This is entered in Well & Completion Data, Depths.
Total Depth	Total depth must be entered in TD (MD) in Depth under Well & Completion Data. It is also possible to import this from the survey data.
Inserted Eq. Date Installed	If there are inserted equipment's in completion, the install date must be provided. Right-click a part, choose Item Properties, Install Date.
SPM Content	If there are SPM in the completion, make sure they have registered inserted equipment. This can be done by right clicking on SPM and

	choose Item Properties, or drag and drop a part from Part Explorer while holding down the CTRL key.
Casing Count	Casing count will show how many casing is entered in Well & Completion Attributes under Casing.
Casing Drift ID	Make sure that the Casing Drift ID is entered. This can be entered in Well & Completion Attributes, Casing.
Well Hole Count	Make sure that the Well Hole / Drilled Section intervals are entered correctly in Well & Completion Attributes, Well Hole.
Perforation Data	Make sure the perforation intervals are correct in Well & Completion Attributes, Perforation.
Confirm Casing Cement (TOC)	Enter in Well & Completion Data, Casing Attribute, Casing / Liner Element.
Confirm Correct Survey Data	Make sure the survey data is correct. Enter in Well & Completion Attributes, Casing Attribute, Survey Data.
Threads Check (auto)	CSD checks for thread connection errors in the completion string (FIG 2). Thread errors will show in the Error column in the wellbore schematic. Enable the Error column in Options, Setup..., Wellbore Schematic Columns. This check can be overridden by inserting an override reason and press Enter.
Operation Finish Date (current)	Date when the last operation finished must be entered. This can be found in Well & Completion Data, General Data.
Tubing Install Date (TH Landing)	Date when tubing was installed/completion finalized must be entered. This can be found in Well & Completion Data, General Data.
Minimum Drift ID	Shows the minimum Drift ID on the completion string.
Approved by	When user have checked all the topics, check for approve the list.

Tip! If the Check List is missing, go to View, Toolbars and Docking Window and select Check List for this to appear in the main screen.

1.3.2.4 Explorer

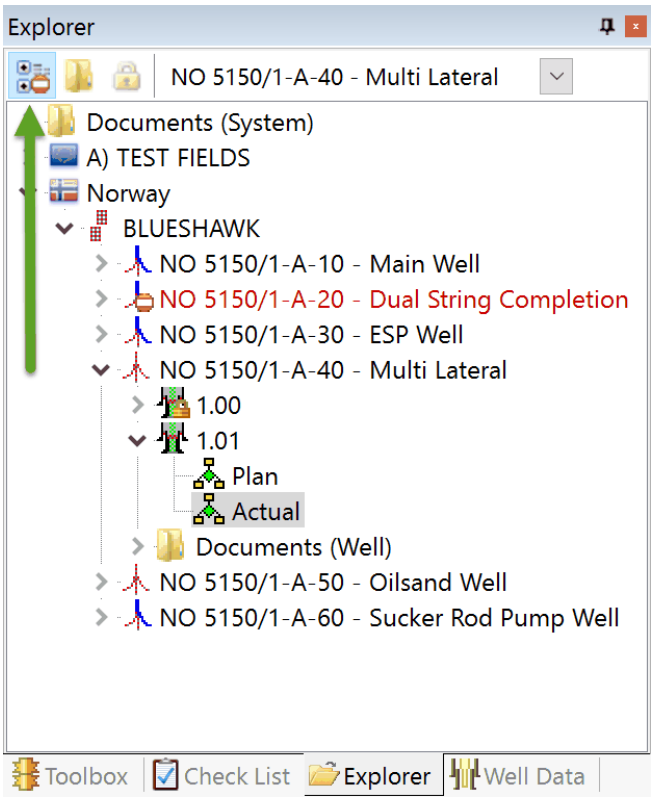
You can open a revision directly from Explorer tab.



Tip! If Explorer is missing, go to View, Toolbars and Docking Window and select Check List to enable.

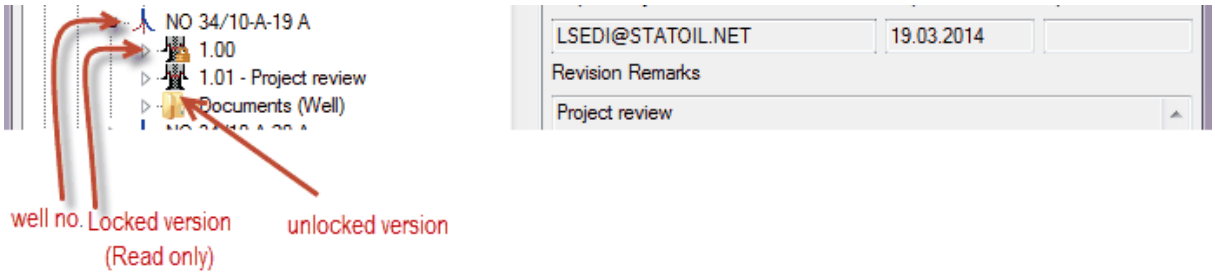
Show/Hide Expired Wells

By clicking the expired button, you can show or hide all the expired wells in the system. The expired wells will show in red font.

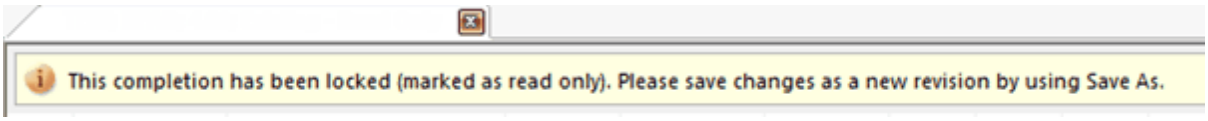


Set Read Only

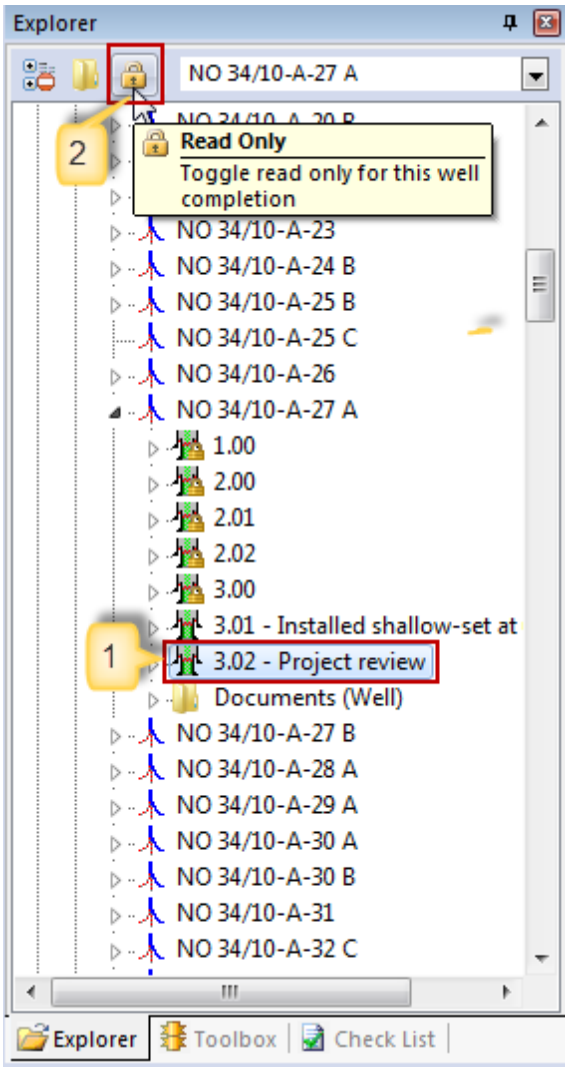
When a revision is set 'Read Only', it's locked for editing and marked with a padlock icon. Only the user initially locking it, or the System Administrator can unlock it.



Whenever you open a Read-Only well, this information bar will show at the top:



After working with a revision, you might want to set it to Read Only, so no other users are able to make any changes to the final / Existing revision.



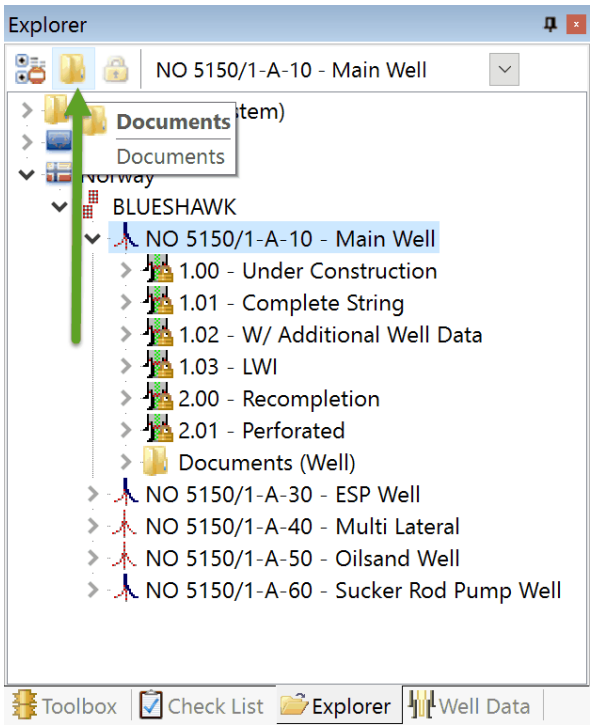
1. Choose the the revision you wish to set in Read Only mode.

2. Click the padlock button at the top of Explorer.

NOTE: Only the user who has set the revision to Read-Only or the System Administrator, can unlock it.

Document folder

In the Explorer tab, the user also have the possibility to open the Well Documents folder for a chosen well.

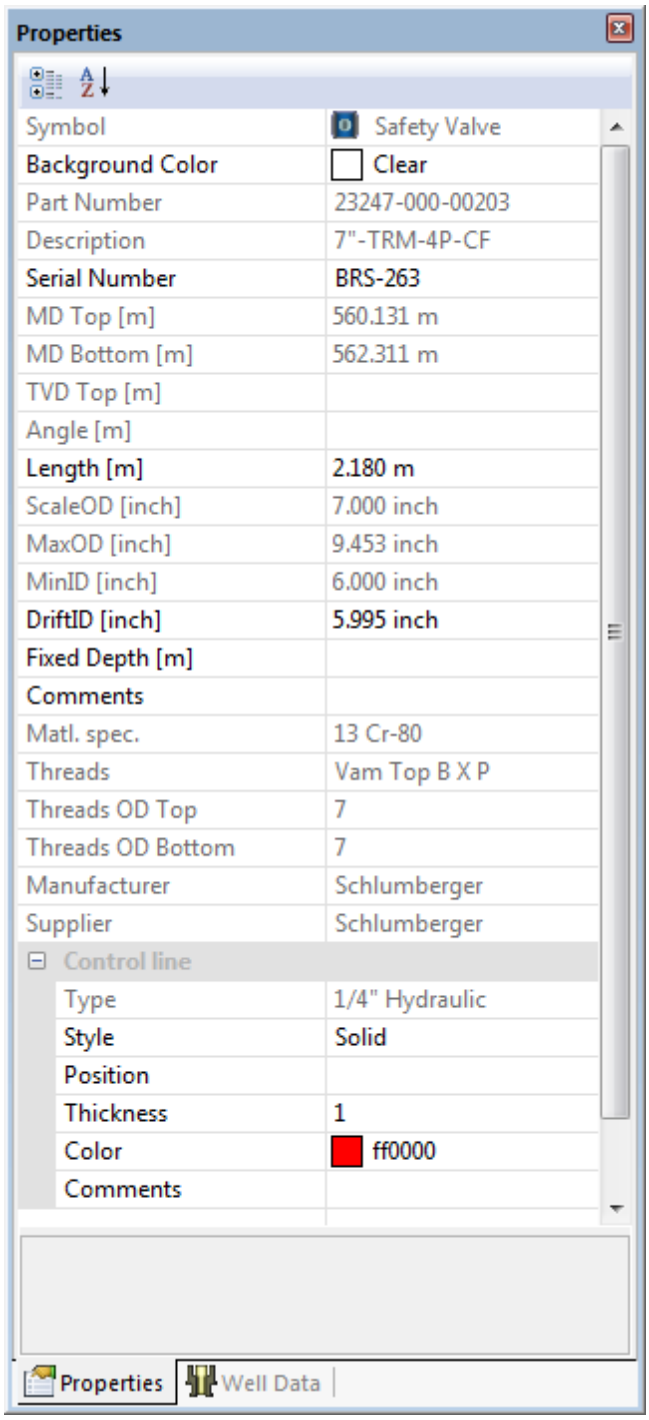


1. Activate/click the wanted revision.

2. Select the folder symbol at the top of Explorer.

1.3.2.5 Properties dialog (Item)

The Properties dialog shows a lot of information about the highlighted item in the Schematic window. The properties in black font are editable directly in the Properties dialog. Make a change to a property and click Enter.



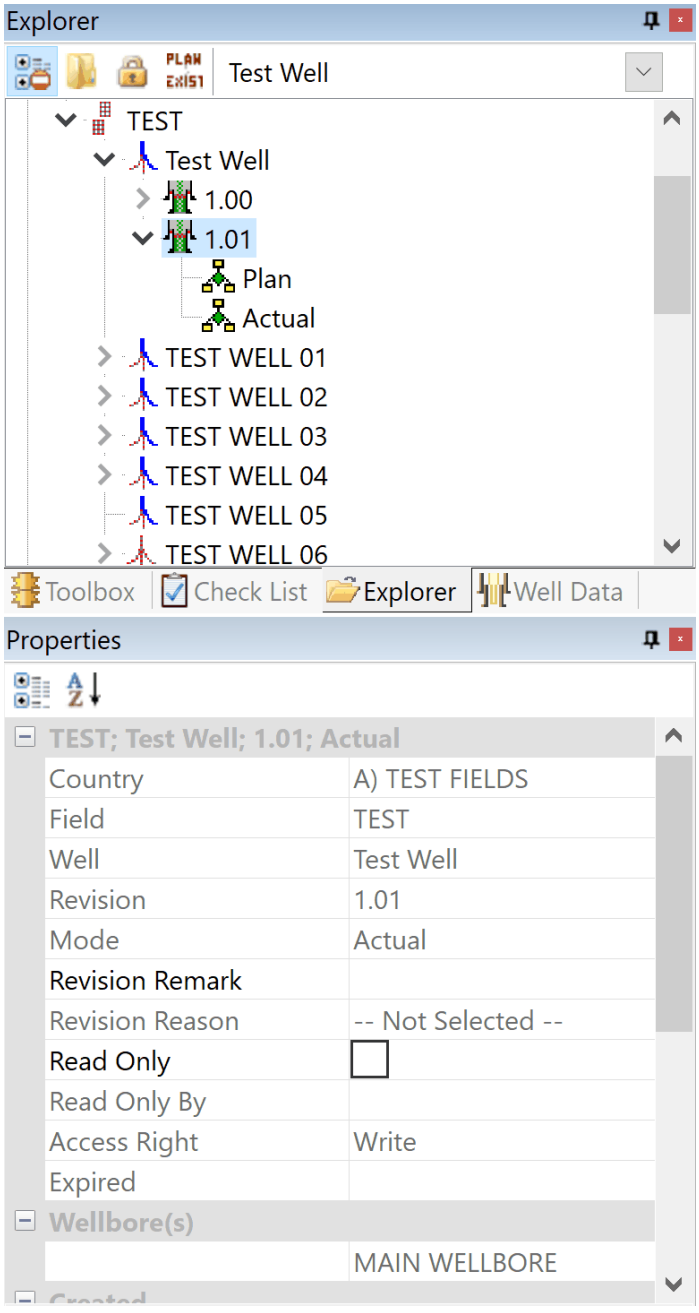
In the properties dialog, users can also change the current Scematic row color. This will also affect how the text will appear in Sketch mode.

One can also change different Dynamic Attributes in the Properties dialog. I.e. for the glass plug, it is possible to change the status of the part from Open to Closed or vice versa.

NOTE: If a part has additional information such as control line or inserted equipment, will this appear on the bottom of the Properties dialog. For the Control Line, you can change different information such as Style, Position, Thickness, Color and Comments.

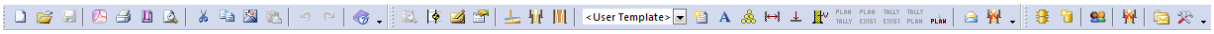
1.3.2.6 Properties dialog (Well)

The Properties dialog shows information about the highlighted well or revision in the Explorer window. The properties in black font are editable directly in the Properties dialog. Make a change to a property and click Enter.



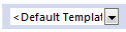
1.3.2.7 Toolbar

The toolbar will work as a shortcut to the some of the most used functions in CSD. It is possible to move and place this anywhere on the desktop.



Function	Description
	Create a new document
	Open an existing mode
	Save the active document
	Save the active document as a PDF file
	Print the active document
	Change the page layout
	Print preview. Display full pages
	Cut the selected row and put it on the clipboard
	Copy the selected row and put it on the clipboard
	Function to copy the active document as image
	Insert content clipboard content
	Undo the last action
	Redo the previously undone action
	Display program information, version number and copyright
	View part information on selected item
	Edit attributes of selected item
	Edit comment on highlighted item
	Item data
	Register completion data
	Register completion attributes


Enter secondary string mode



Choose report template


Choose columns to display, units and decimals, and symbol scaling


Set schematic font


Inventory


Minimum ID


Change depth reference to specific depth


Calculates volumes in annulus and string

Change mode of active string from plan to tally

Change mode of active string from plan to existing

Change mode of active string from tally to existing

Change mode of active string from current mode to plan


Display my messages


Delete fields, wells, completions and modes (only able for admin)


Maintenance of symbols groups and symbols


Search for parts in the equipment database


Administer users. Give access to fields and wells

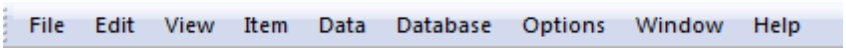

Message administration


Global system settings dialog

1.3.2.8 Status bar

When a operation is executed or a selection is made in either the tool bar or the menu bar, a short description will be displayed on the status bar.

1.3.2.9 Menu bar



File The File menu contains the basic file options like new, open, save and print. You will also find the most recent opened wells here.

Edit The Edit menu contains basic editing commands like Cut, Copy, Paste and Undo, but also Copy to Image, Save to Image(s) and Copy All.

View The View menu shows customizing options for the CSD main screen such as Toolbars, Docking Windows and zoom of the current main-window.

Item The Item menu contains options for highlighted part in the schematic, such as Change, Comment, Length etc.

Data The Data menu is the main menu for data entry. It also contains Secondary, Dual String, Insert Additional Wellbore, Threads Report, calculation option and changing modes of revisions.

Database The Database contains mainly options for users with administration access such as Code Tables, Administrations, Symbol and Parts.

Options The Options menu contains several Setup options, users messages and system log.

Window The Window menu shows open windows and window display options.

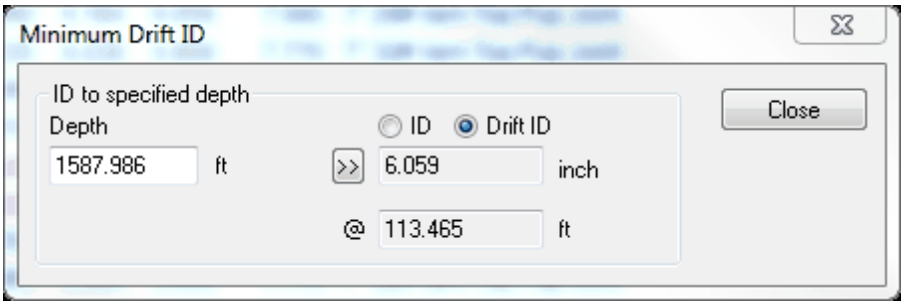
Help The Help menu provides access to the user manual and support site. (Custom setup by the System Administrator).

1.3.2.9.1 Data

Enter topic text here.

1.3.2.9.1.1 Minimum Drift ID...

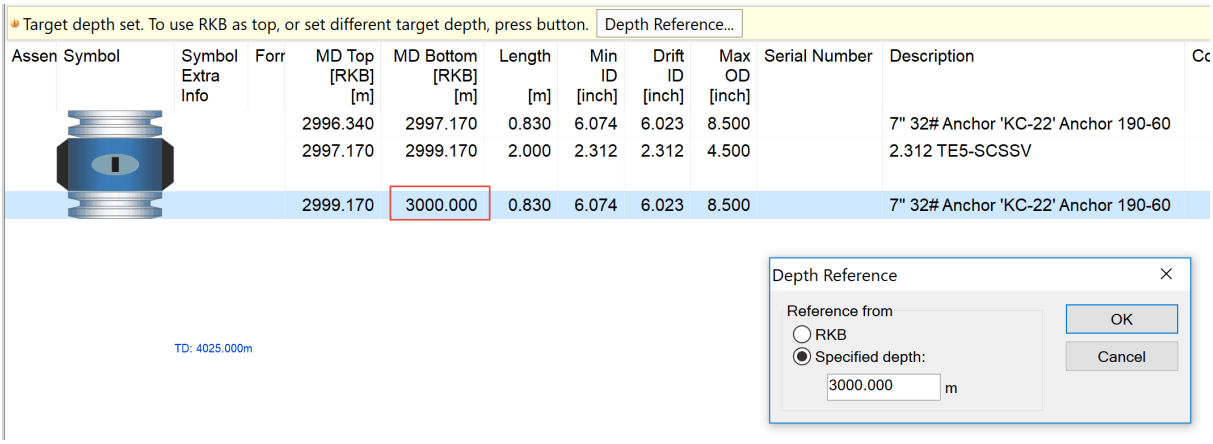
Minimum Drift ID will find the minimum drift ID or ID to a specified depth. If a specific element in the completion is selected, the Minimum Drift ID or ID down to the selected element is found. If no element is chosen, the Minimum Drift ID for the complete completion is shown.



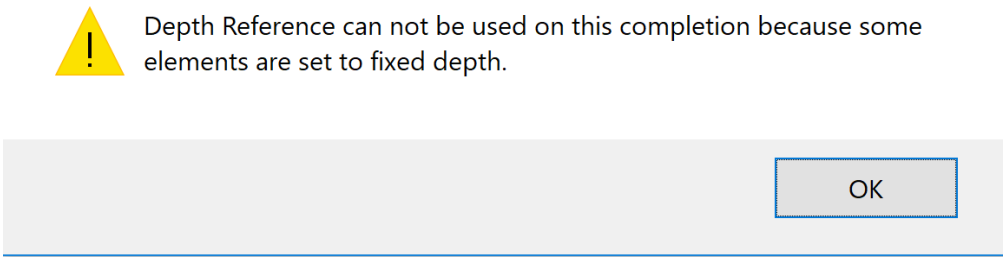
Choose Data, Minimum Drift ID. Adjust Depth if needed. Press the ">>" button to calculate the Minimum Drift ID.

1.3.2.9.1.2 Depth Reference...

You can choose to set a specified depth reference when you build the string in Schematic mode. This is the bottom MD of the last completion element.



NOTE: You can not set a depth reference in a completion already containing fixed depth on one ore more items.



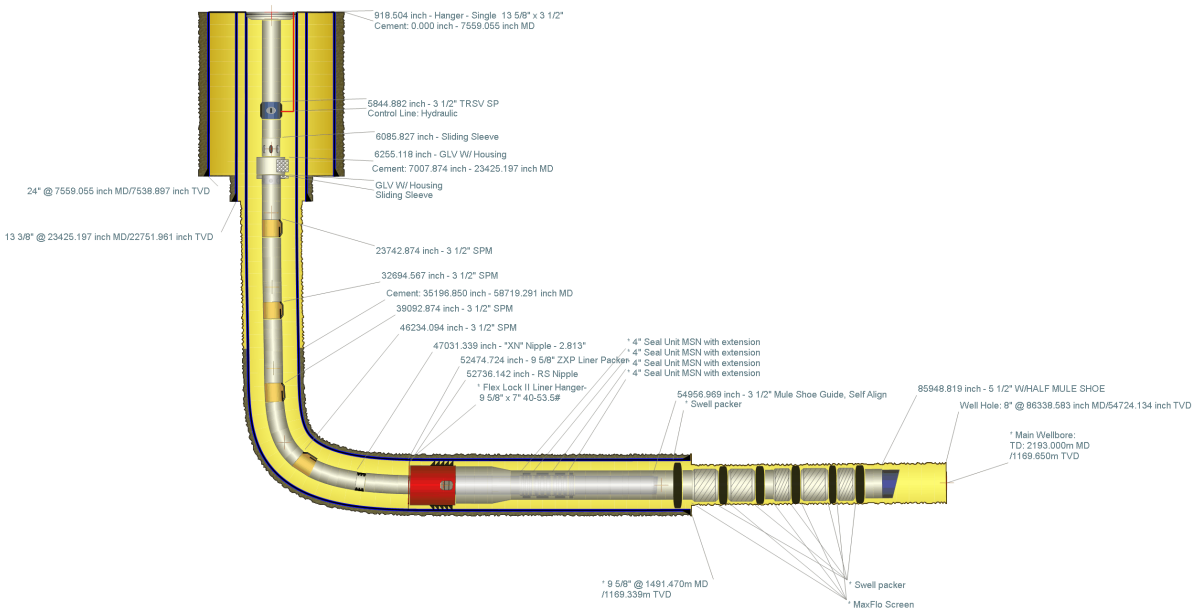
1.3.3 Sketch

The simplified Sketch shows the string along a two-dimensional curve. The curve can be freely defined by the user. By default the scale of the equipment and attributes along this curve is equal to the Schematics scale.

The following data can be shown in Sketch:

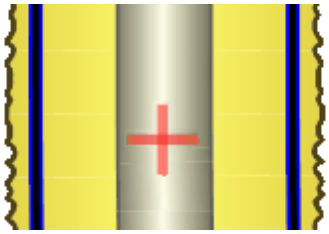
- Elements (With or without symbols)
- Casings
- Perforations
- Fish
- Cement Plugs
- Gravel Pack
- Casing Attributes
- Casing Cement
- Control Lines
- Well Hole
- Formation zones
- Bottom of Well Info
- Inserted Equipment
- Comments
- Custom notes

An example of how a Sketch might look like:



1.3.3.1 Control Points

The user is free to change the shape of the Sketch wellbore. By moving the mouse pointer over the red crosses called control points, the control point will be highlighted to show that it can be moved. Press the left mouse button and drag the cross to the position you want, then release the mouse button. In this operation, the completion elements will hide while moving a control point.



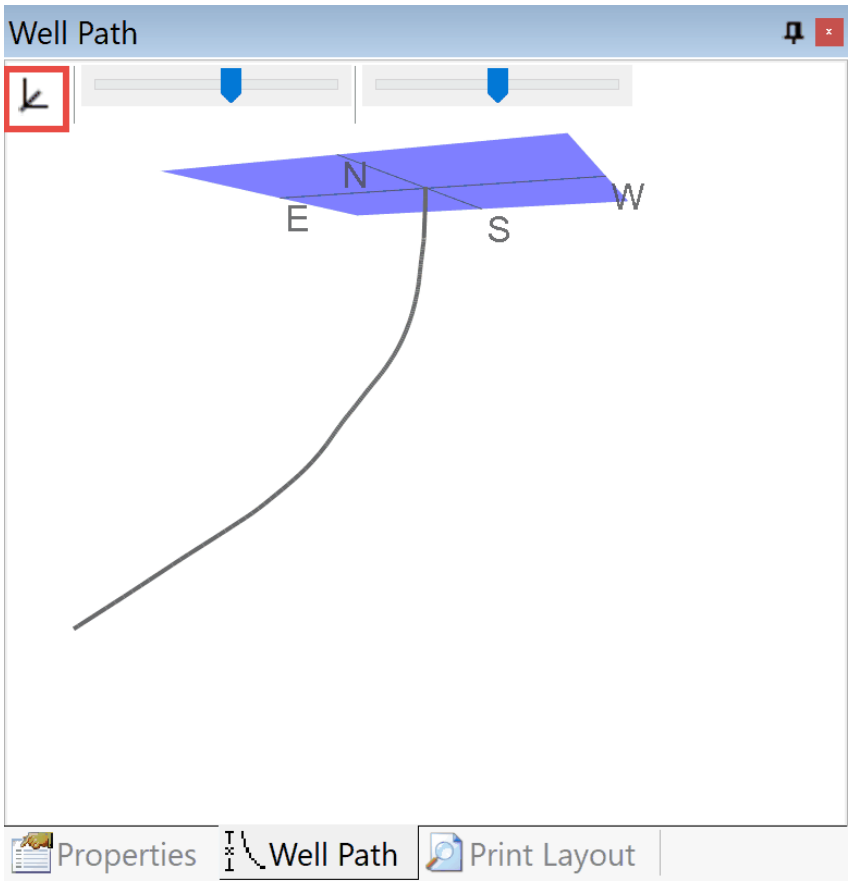
NOTE: The red control points are only there to define the curve, and will not show on the printouts. The desired positioning of Sketch can be saved.

1.3.3.1.1 Default Setup

There will be a default setup for the shape of the Sketch, but once you change it and press save, the new layout will be saved along with the revision. You can move back to the default layout by choosing right mouse button, "Reset All Control Points".

Let Sketch follow the trajectory

You can spin the Well Path as you like and press the trajectory button at the upper left corner. You will then see that the Sketch will change and take the same form as the trajectory / chosen positioning in the Well Path tab at the lower right (next to the Properties tab).



1.3.3.1.2 Move Control Points

By moving the mouse pointer over a control point, the red control point will be highlighted to show that it can be moved. Press the left mouse button and move the cross to the position you want. Then release the mouse button. In this operation, the casings will be shown so that you can have an impression on how the result will look like.

Sketch - Default / Sketch - Linear:

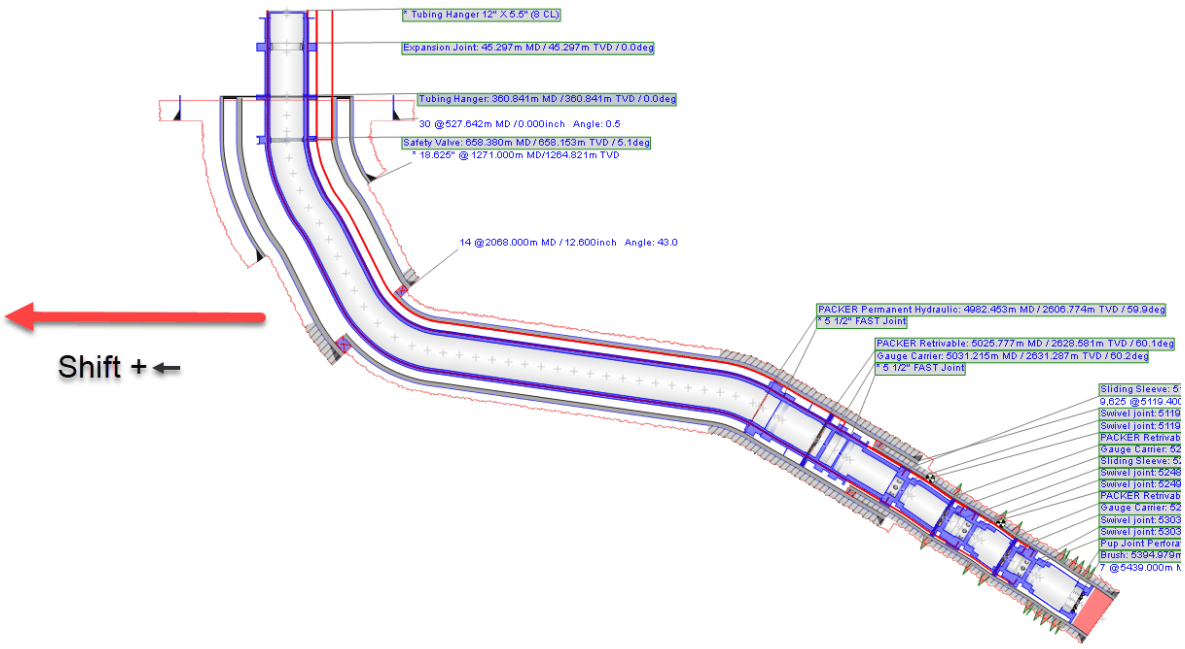
If you want to move several control points at the same time this can be done by holding the Ctrl button down and select each point by moving the mouse pointer over and click the left mouse button (while the Ctrl button is pressed).

The control points will now have a blue colour. Then use the mouse pointer to drag the points to the position you want.

It is also possible to select several control points by using the selection tool. Press the left mouse button and drag the mouse in any direction. A rectangular box will be displayed. When you release the mouse button, the control points which are displayed inside the rectangle will be selected.

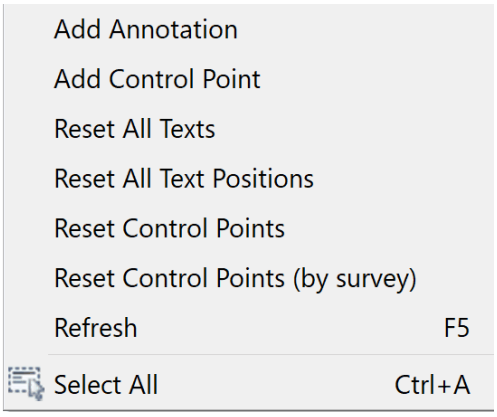
All Sketch templates: Remove unused white-space / move the drawing

To move one of the Sketch drawings: Hold down the Shift key while pressing one of the arrow keys.
Press Save to let CSD remember the settings on the current PC.



1.3.3.1.3 Add or delete Control Points

Control points can be added or removed. To add a control point, click the right mouse button and the following menu will be displayed:



Select Add Control Point. The new control point will be added in the sketch at the location where the mouse pointer was when you pressed the right button. If you press the right mouse button between two existing control points, the new control point will be located between the existing. You can press Undo to remove the newly inserted control point.

1.3.3.2 Text

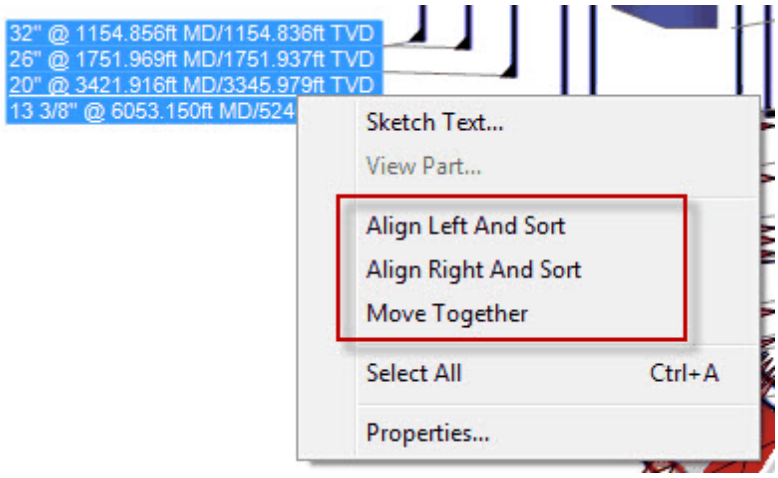
To get the best sketch layout, you have to adjust the position of the texts. This is done using the mouse and is very similar to moving control points as described above. Press and hold the left mouse button while the pointer is above the text. Pull the text to the position you want it to be, and release the mouse button.

To move several text objects at the same time, hold down the Ctrl-key and select the different text objects with the mouse while keeping the Ctrl-key pressed.

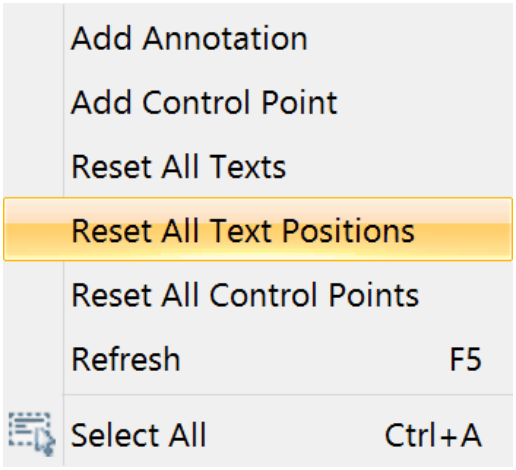
You can also use the mouse to select several text objects by holding the left mouse-button down while dragging the mouse. A rectangle will be shown and all text objects inside the rectangle will be highlighted. Use the mouse to move the selection.

For select all text objects, press the right mouse button. A menu box will appear. Select the “Select All” menu item. You can also use the keyboard by pressing the standard windows combination for Select All (Ctrl + A)

If you select text objects and click the right mouse button you can choose to align and sort them left or right. You can also move them together if you for example have identical parts to save space and get a better structure in the Sketch.



You can always reset text position by right clicking the canvas and choose "Reset All Text Positions".



1.3.3.2.1 Changing the texts

It is possible to change all the texts in the sketch. Only one text can be changed at the time. Choose a text by clicking on it with the left mouse bottom. If you click once more, you enter edit mode for this text. You can also press F2 instead of the second mouse click. In the textbox you can either write free text or in code format. By writing in code, the information will automatically appear, and maintain updated if you change some of the information in CSD. It is important to remember that when you write in freetext you loose the connection to the data in the object. For instance if you have a casing text, and then change the depth of the casing, the freetext in the sketch will not show these changes.

If you change the text, either with freetext or code, CSD will automatically add a star sign to the text as shown in figure below.

List of code that can be used in Sketch

WellCompletion:
<PB_MD>
<PB_TVD>
<FILL_MD>
<FILL_TVD>
<TD_MD>
<TD_TVD>

Elements:
<DESCRIPTION> (part)
<LENGTH>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>

InsertedEquipment:
<TYPE> (symbol)
<DESCRIPTION> (part)
<MD_TOP>
<MD_BOTTOM>

Casing:
<SIZE>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>
<TVD_BOTTOM>

WellHole:
<SIZE>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>
<TVD_BOTTOM>

Perforation:
<STAGE_NO>
<CLUSTER_COUNT>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>
<TVD_BOTTOM>

CasingAttribute:
<TYPE>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>
<TVD_BOTTOM>

Cement:
<TYPE>
<MD_TOP>
<MD_BOTTOM>
<TVD_TOP>
<TVD_BOTTOM>

DynamicAttribute:
<TYPE>
<MD_TOP>

Fish:
<TYPE>
<MD_TOP>
<MD_BOTTOM>

MineralZone (Formation):
<TYPE>
<MD_TOP>
<MD_BOTTOM>

To get back to the original standard text, you have to enter edit mode and then delete the text and press Enter. The original text is taken from the Part Database, and the changes you make in Sketch mode won't have any effect in that database.

A selection of text objects can be hidden from the sketch view by pressing the Delete key. To show these texts again, choose "Reset all texts" from the short menu described above. By hiding a text and showing it again, the default text description is given to the text object.

It is also possible to add annotation text in the Sketch by right click and choose Add Annotation. Click at the text box for writing free text and adjust in properties dialog MD Top, MD bottom and color for the text.

Tip! You can break the text to a new line by pressing Ctrl + Enter.

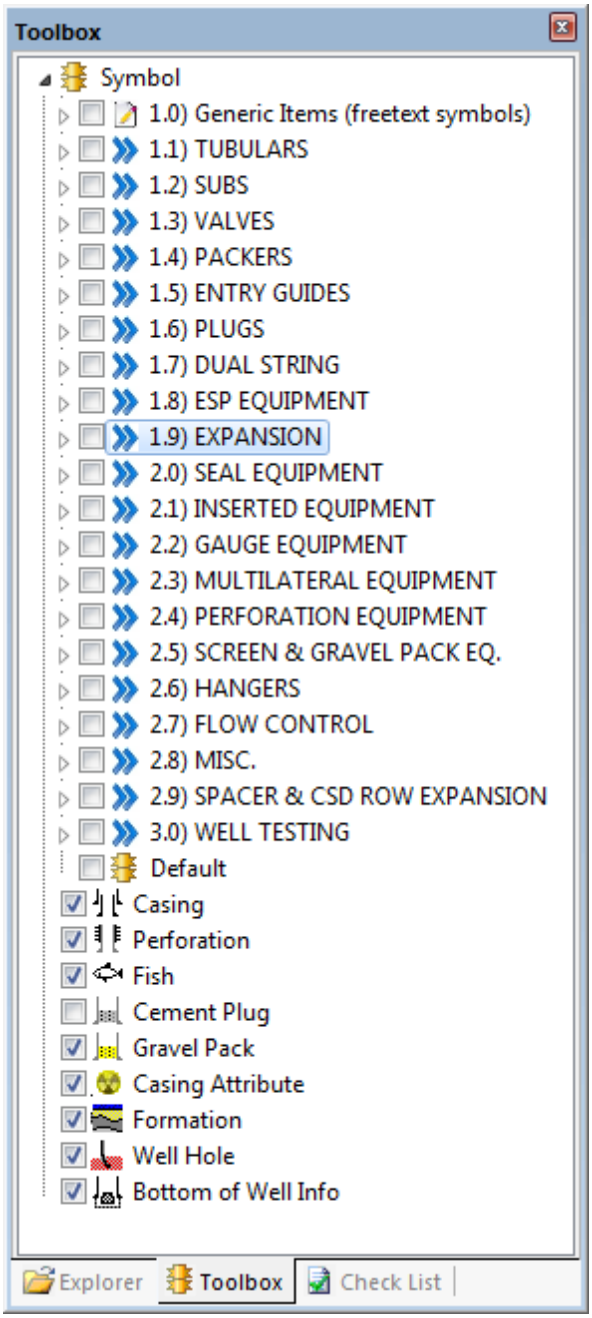
1.3.3.3 Toolbox in Sketch mode

The Toolbox is used here to pick a symbol type that you want more information on. If you want more information on Pup joints, you put a mark in the box next to Pup joint. Now all Pup joints in the string will show depth and description in addition to the symbol showing in the simplified schematic.

Some of the symbols that are defined as important will be shown in Sketch as default. This can be adjusted by the CSD administrator.

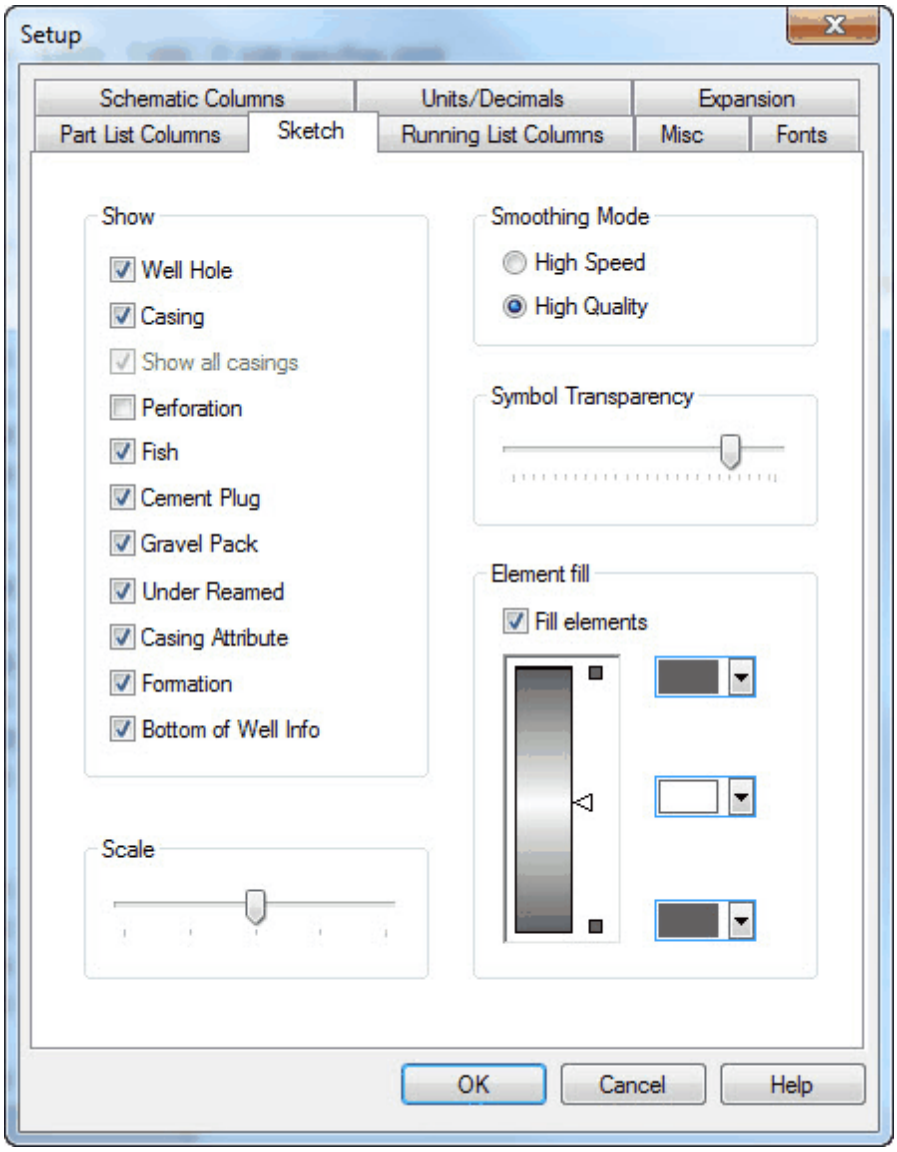
The toolbox also contains choices for which completion attributes that should be displayed in the sketch. Note that on / off only changes the text part and not the graphical presentation. This means that if you indicate that you don't want to see perforation data only the text will be removed from the Sketch and not the perforation symbols.

Example of toolbox in the Sketch mode:



1.3.3.4 Options

Choose Options, Setup from the menu and open the tab called Sketch. Here you can set what to show in the sketch.



Show: lets you decide what texts are to be shown for the different completion attributes. You can also choose if you want to show all the casings or only the inner one.

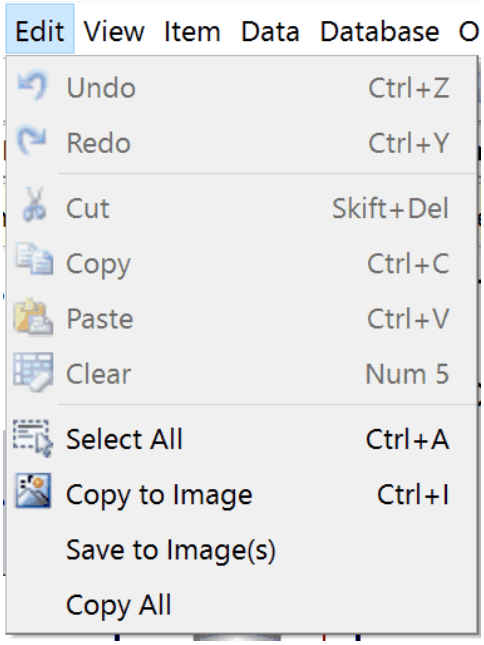
Smoothing Mode: gives you two options: high speed or high quality. High quality is the default choice and often the most sensible one.

Element fill: lets you control if the symbols are to be filled or not. You can customize the fill.

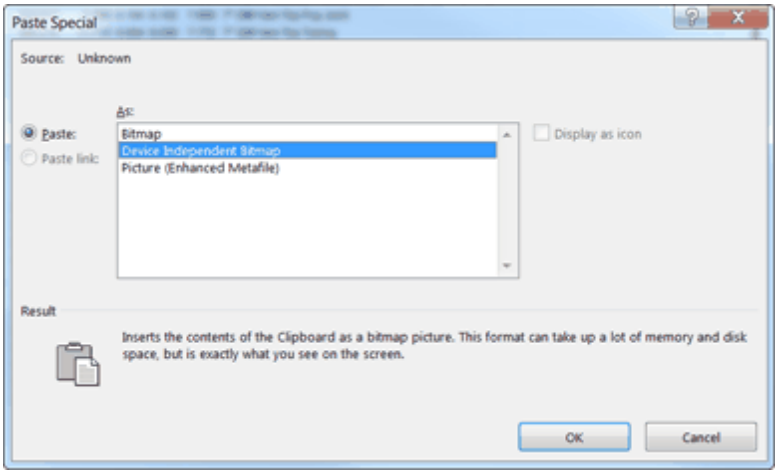
Scale: controls how the width of the sketch.

1.3.3.5 Copy to Image

Choosing Edit, Copy to Image, copies the sketch to the clipboard, including a well report header. This enables you to paste it into other applications. The sketch is built in two formats: Metafile and bitmap. Choose the format that gives the best result in the external application.



Tip! When pasting into Microsoft Office applications you should use "Edi**t, Paste Special, Device independent bitmap**" for the best result.



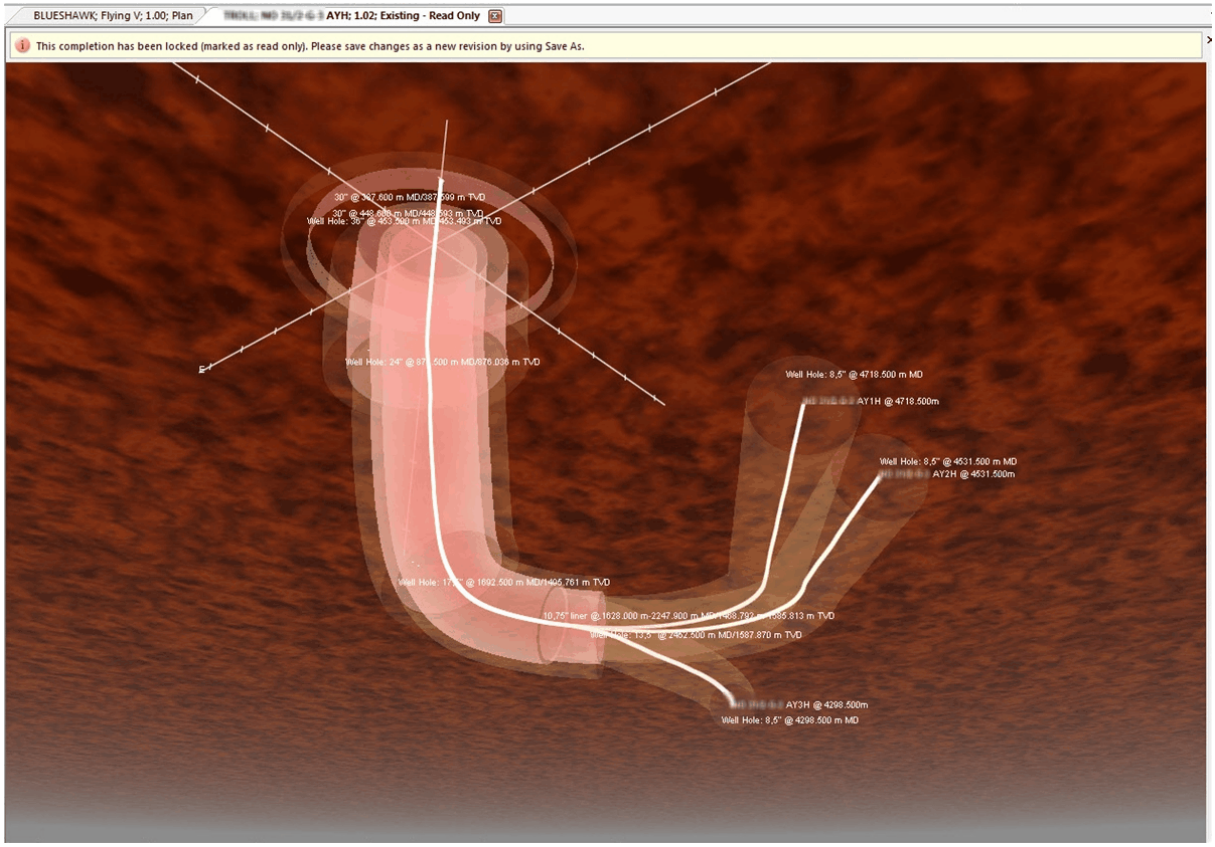
1.3.4 Well Path

The Well Path shows a 3D-representation of the well path. This only works if you have imported survey data.

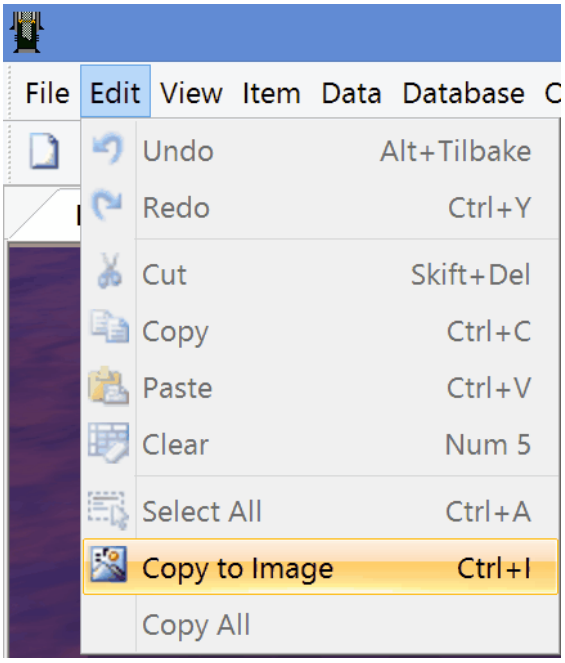
True Scaling of Sketch mode
If you click on F12 while in Well Path, you will see that the Sketch will change and take the same form as in Well Path. The completion equipment will also be scaled accordingly (true scale mode). If you then click F12 again in Sketch mode, the schematic will keep the Well Path shape, but the completion equipment returns from true scaling.

You can zoom, move and twist the drawing using special mouse operations. If you press and hold

the left mouse button while moving the mouse, you move the drawing. If you press and hold the right mouse button while moving the mouse, you zoom. To twist the drawing, see it from different angles, you press and hold both mouse buttons while moving the mouse.



You can always choose Edit, Copy to Image to copy the image to the clipboard. Well Path is then made available as a picture that other applications can paste.



1.4 Build Your Completion

In the following examples we assume that your System Administrator has entered all the equipment that you are going to use in your string, and that he/she has defined a well name in the system.

To start building a new completion, select File, New or the toolbar button. 

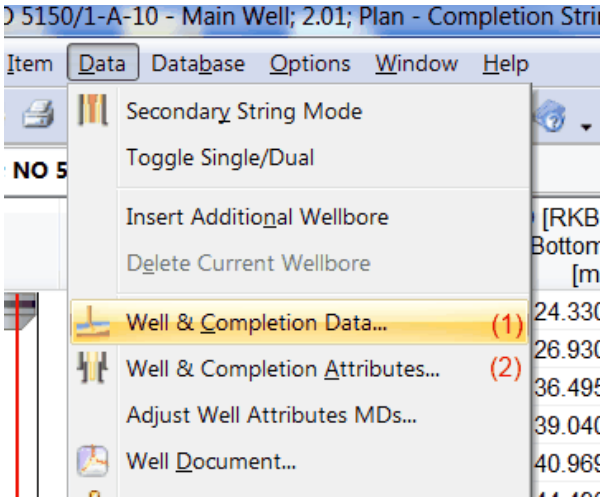
.

Building a new completion involves two major steps:

1.4.1 First Step: Enter Data

First step is to enter data.

A wide variety of data can be entered when building a new completion. We recommend that you start with the Well & Completion Data dialog, and then continue with the Well & Completion Attributes dialog.

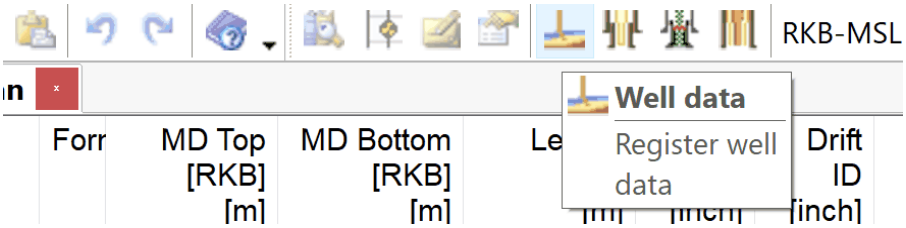


For further information please review the following topics:

1.4.1.1 Well Data

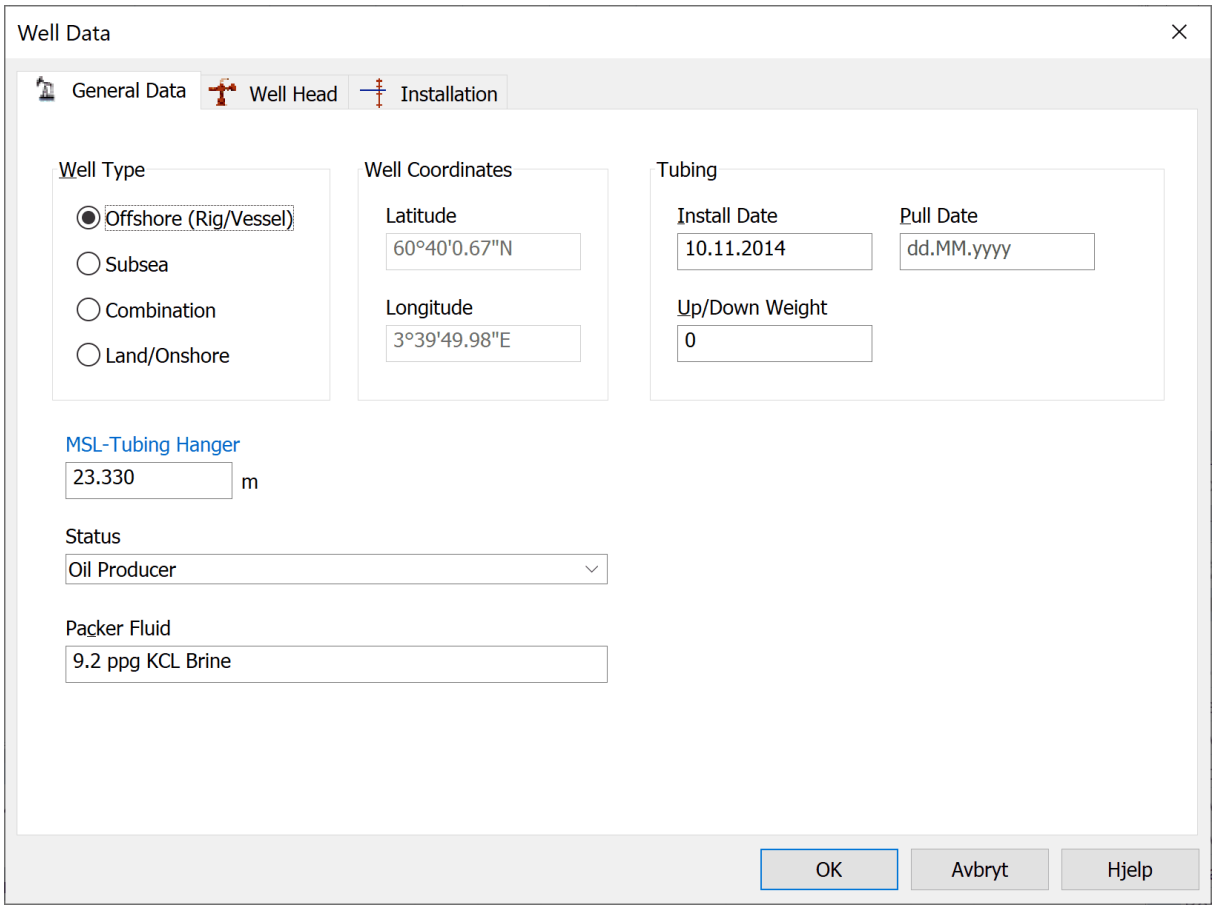
A wide variety of data can be entered when building a new completion. We recommend that you start with the Well Data dialog.

Well Data is opened by choosing Data, Well Data or by pressing the corresponding icon. This is a dialog box consisting of three tabs: General Data, Well Head and Installation.



1.4.1.1.1 General Data

General Data is located under Well Data. The General Data is the main entry dialog for editing and entering Well information such as Well Type, Status, MSL - TH, Tubing Install Date etc.



Input field description for General data.

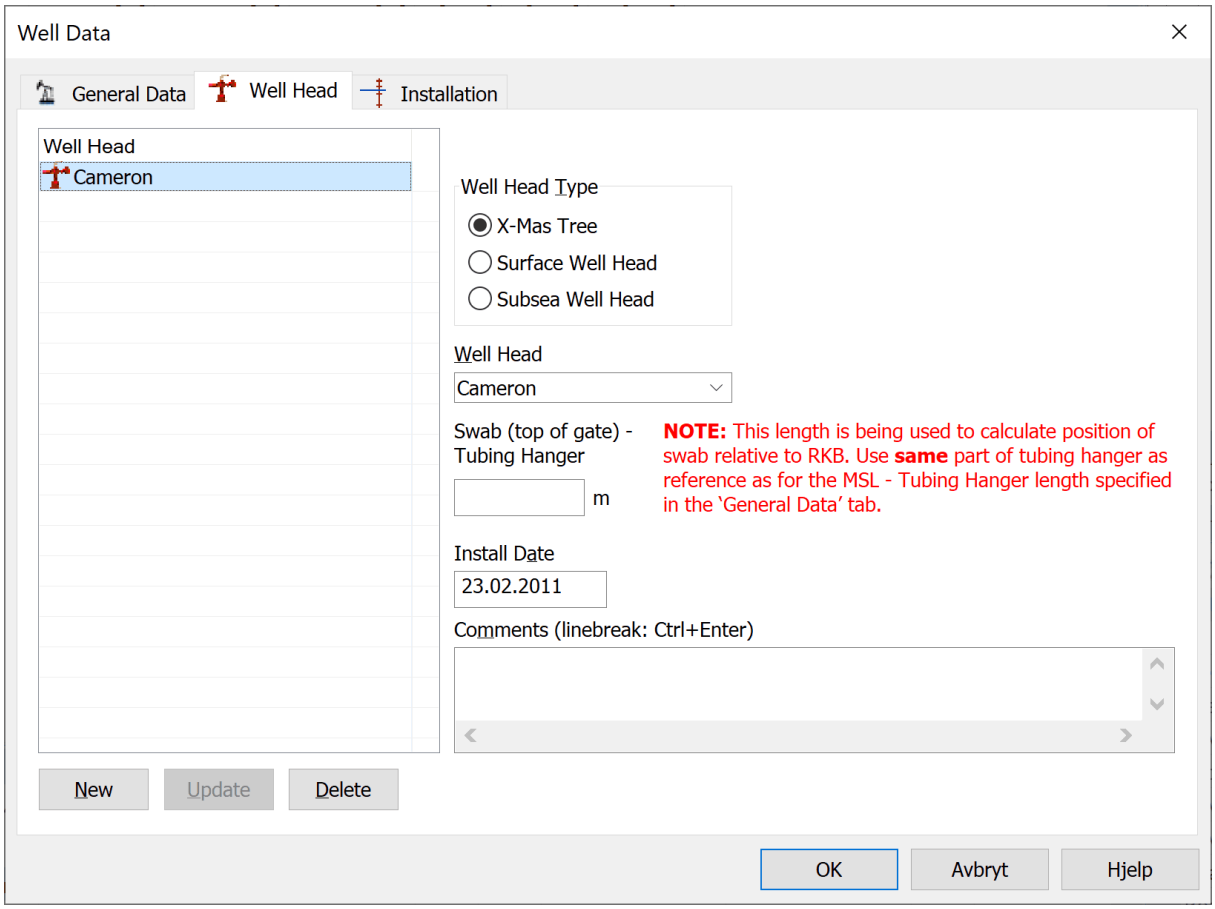
CAPTION	DESCRIPTION
Well Type	Choose type of well.
Well Coordinates	**Latitude/Longitude:** Read only. Shows the registered position from Database, Code Tables, Well. Format: DDD° MM' SS.S" (Degrees, Minutes and Seconds) + compass direction. This will not show graphically in CSD.
Tubing Install Date	Date when tubing was installed / completion finalized **(Normally when Tubing Hanger is landed).**
Pull Date	Date when tubing was pulled.
Up/Down Weight	Weight of the string.
MSL - Tubing Hanger	Distance from Mean Sea Level to Tubing Hanger (landing point).
Status	Drop down list where you choose if the well is an oil producer, gas

injector etc. If you miss a well status in the drop down; please contact the CSD System Administrator.

Packer Fluid Description of fluid in the annulus. (Free text area).

1.4.1.1.2 Well Head

Register well heads and types in Well Head tab under Well Data.



1. Select New.
2. Select Well Head type and scroll and choose current well head.
   Add Swab - TH length (if applicable), Install Date and optional Comments.
3. Press Update.

Edit an existing row

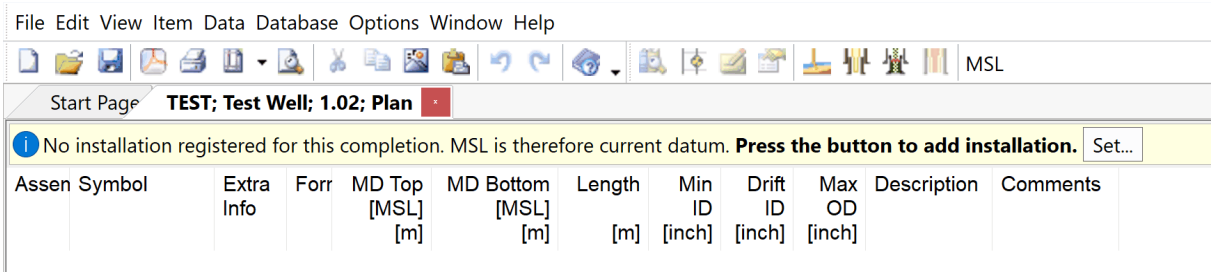
Highlight one of the rows in the Well Head list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be

saved when you push Update, OK or go to another tab.

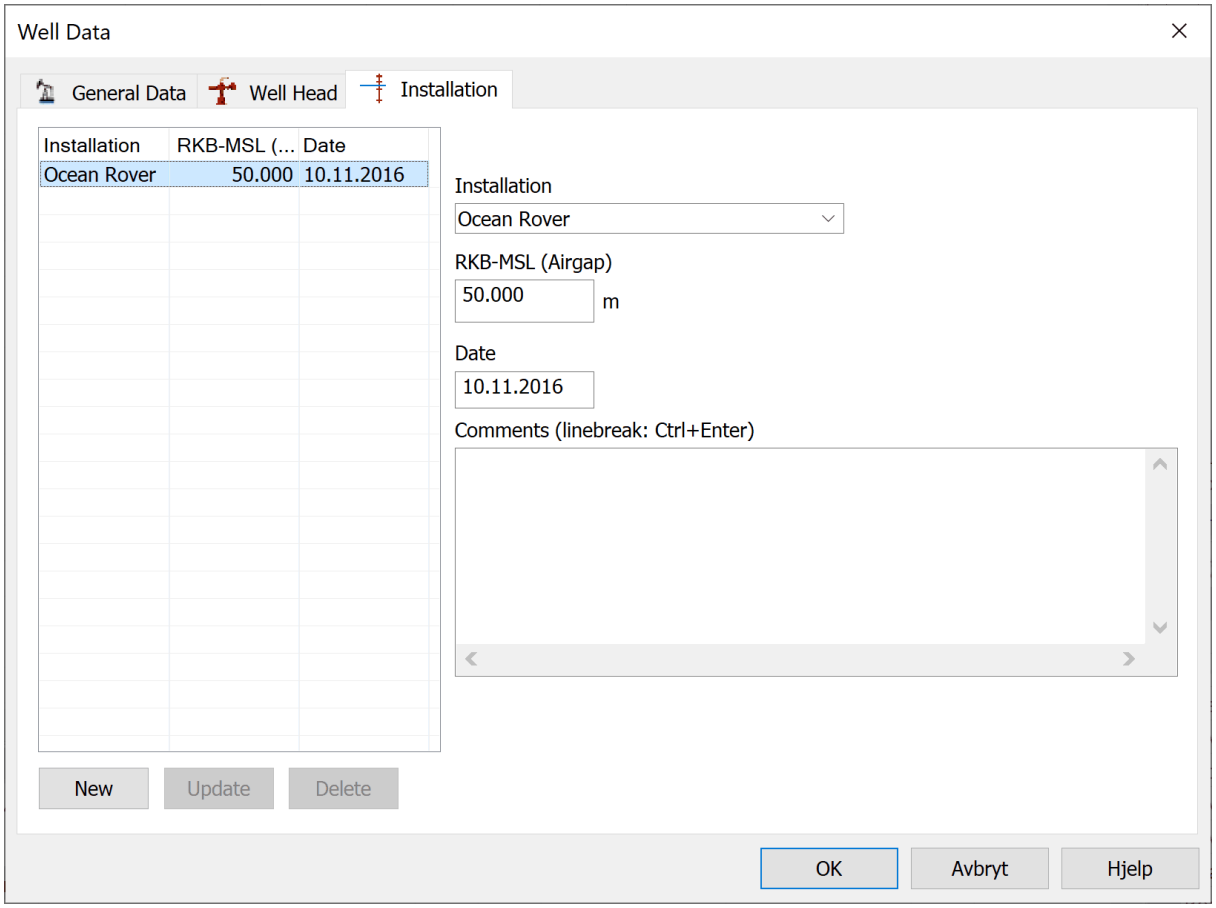
Delete a row
Push the Delete button after highlighting a row in the Well Head list.

1.4.1.1.3 Installation

When you create **new file** in CSD (File, New), you are met with the following message: "No installation registered for this completion. MSL is therefore current datum. Press the button to add installation."

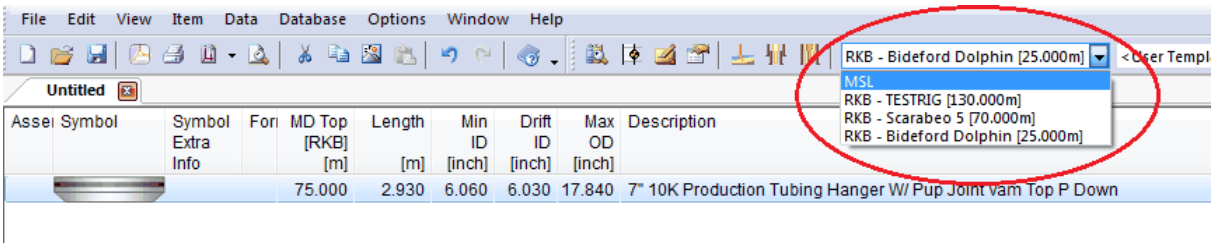


Press the Set...-button or open Well Data and go to the tab called Installation:



Press the New button and choose a rig from the Installation dropdown. Enter the correct RKB-MSL (Airgap) and press Update. The set Installation and airgap will now be the new datum.

If more than one installation has been involved in operations of the well, you can add additional installations with belonging airgaps in the same manner. You will then be able to switch back and forth between the installations and MSL to view the welldata from the preferred reference point. The easiest way is to pick from the dropdown in the top toolbar in the CSD main window:

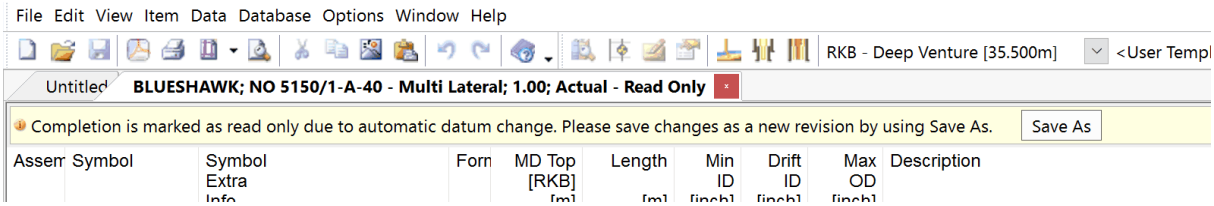


When you have set datum and are ready to start building the string, you have to enter the MSL-Tubing Hanger (Landing point / shoulder) depth in the General Data tab in the Well Data dialog. This value is set for CSD to calculate the correct RKB-Tubing Hanger depth, which will be the top depth for the first element in the completion schematic. If you don't have the MSL-Tubing Hanger depth, you can use the following equation to find it:

RKB-Tubing Hanger – RKB-MSL (airgap) = MSL - Tubing Hanger.

You will need to know the RKB-MSL (airgap) and subtract it from the RKB-Tubing Hanger depth.

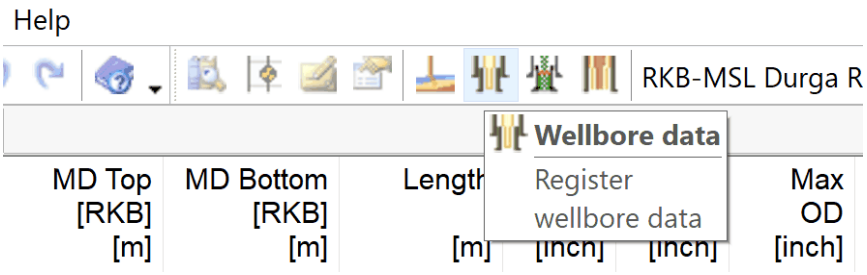
NOTE: When you attempt to save files created in previous CSD versions, you are met with the following message: "Completion is marked as read only due to automatic datum change. Please save changes as a new revision by using Save As."



1.4.1.2 Wellbore Data

In addition to Well Data, you should also register data in Wellbore Data as this will affect the layout of the Schematic and Sketch. In order to get a proper presentation, you should e.g. enter casings, perforations, formation etc.

Wellbore Data is opened by choosing Data, Wellbore Data or by pressing the corresponding icon.



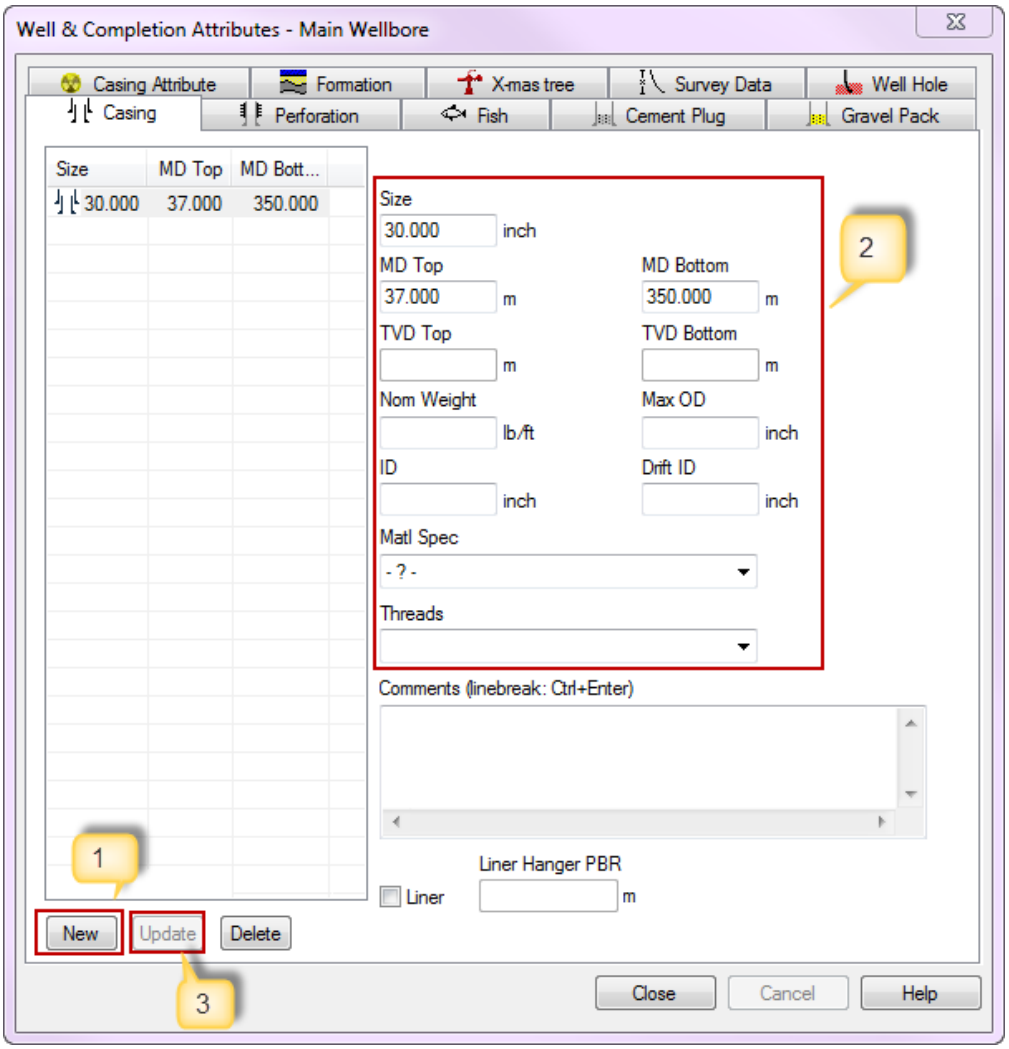
Attributes that can be entered:

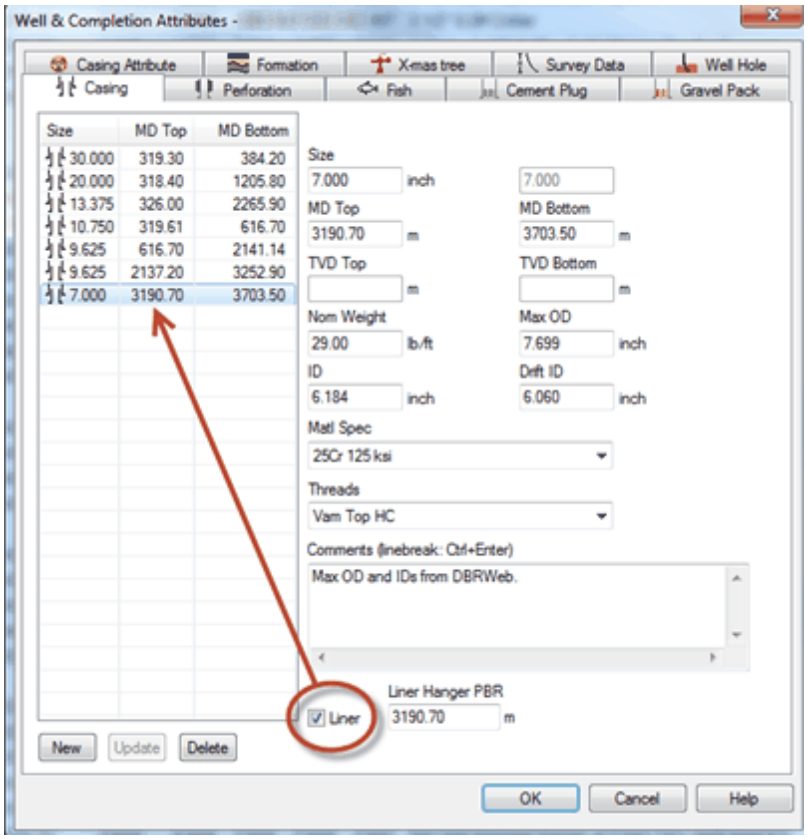
- General Data
- Depths
- Survey
- Hole Size
- Casing
- Casing attributes
- Cement Plug
- Perforation
- Gravel Pack
- Formation
- Fish
- History

1.4.1.2.1 Casing

Casing is located under Data and Wellbore Data. The casing tab contains information about casing size, casing depth and general information such as Max OD, ID, treads etc.

The inner casings are drawn on the schematic (the casing shoe is represented by a triangle), while all casing are shown in the Sketch mode. The width and placement on the schematic depends on the data that has been entered. If the casing is a liner, then remember to check off the “Liner” box, and add depth of the Liner Hanger PBR. In addition; you can enter attributes such as radioactive tags and casing patches, by choosing the Casing Attribute tab.


Well & Completion Attributes - Main Wellbore
Casing Attribute
Formation
X-mas tree
Survey Data
Well Hole
Casing
Perforation
Fish
Cement Plug
Gravel Pack
Size
MD Top
MD Bott...
30.000
37.000
350.000
Size
30.000
inch
MD Top
37.000
m
MD Bottom
350.000
m
TVD Top
m
TVD Bottom
m
Nom Weight
lb/ft
Max OD
inch
ID
inch
Drift ID
inch
Matl Spec
- ? -
Threads
Comments (linebreak: Ctrl+Enter)
Liner Hanger PBR
Liner
m
1
2
3
New
Update
Delete
Close
Cancel
Help



1. Select New.
2. A new row will be inserted into the list and you can start to enter all the data on the right-hand side. The mandatory fields in this window are: Size and MD bottom.
3. Push Update.

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

Push the Delete button after highlighting a row in the list.

NOTE: If the casing is a liner, then remember to check off the "Liner"check-box, and optionally add depth of the Liner Hanger PBR.

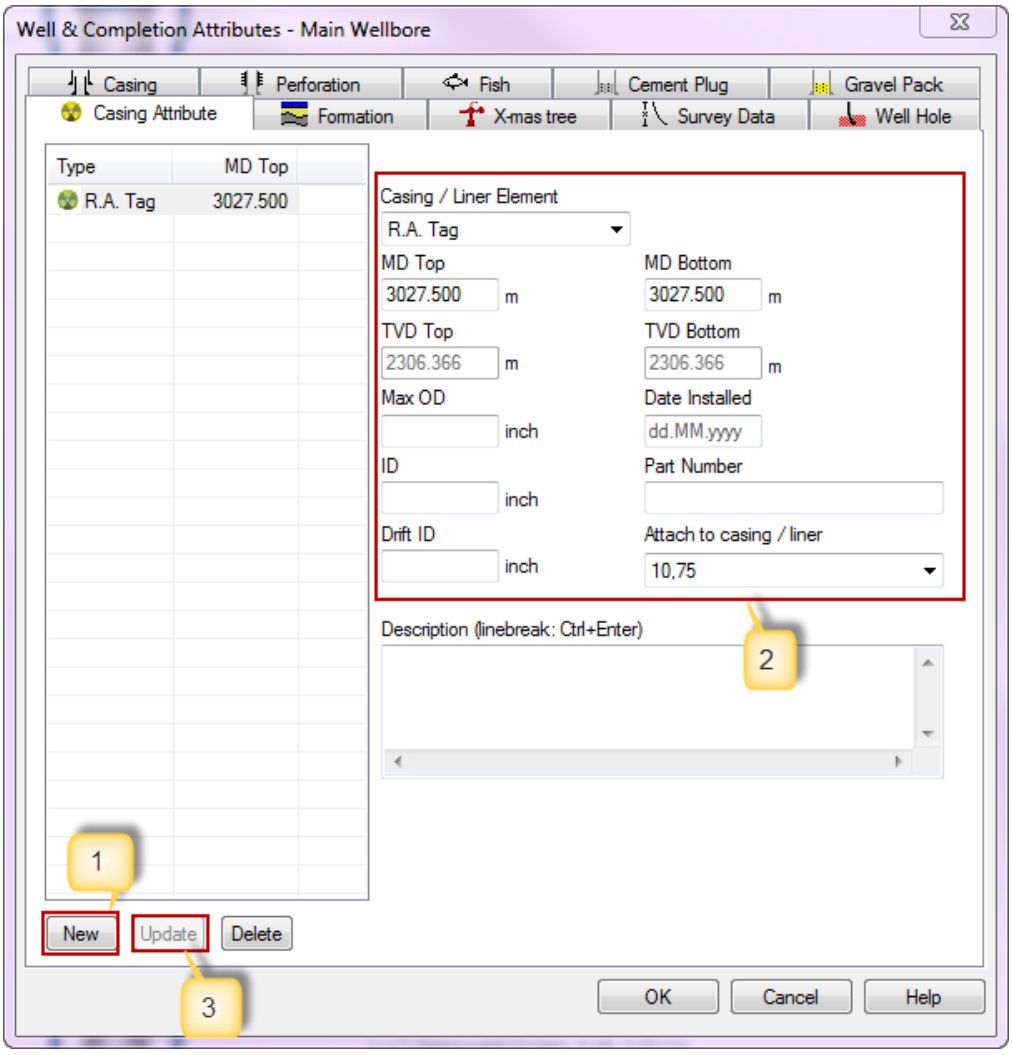
Input field description for casing string (list and details):

Input field	Description

Size	Nominal diameter of casing/liner
MD Top	Measured depth (MD) for the top of the casing/liner
MD Bottom	Measured depth (MD) for the bottom of the casing/liner
Nom.Weight	The nominal weight per foot of the casing/liner pipe
Max OD	The maximum outer diameter (OD) of casing/liner
ID	Inner diameter of casing/liner
Drift ID	The inside diameter of casing/liner that pipe manufacturer guarantees per specifications
Matl Spec	Material specifications
Threads	Also known as Coupling. The coupling between two joint of casing, also known as casing collar
Comments	Add additional comments regarding current casing in comment field
Top of PBR	(Top of Liner-TOL). Depth to top of liner PBR. This can only be registered if "Liner" has been checked off.

1.4.1.2.2 Casing Attribute

A casing attribute such as Cement, Collapsed Casing, Tracer etc. can be inserted in the Casing Attribute tab in Wellbore Data. The mandatory fields in this tab depends on the casing attribute type.



Insert casing attributes:

1. Select New.
2. Choose type in the Casing/ Liner Element dropdown list, and add information to the casing attribute .
3. Press Update to enter the new casing attribute.

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

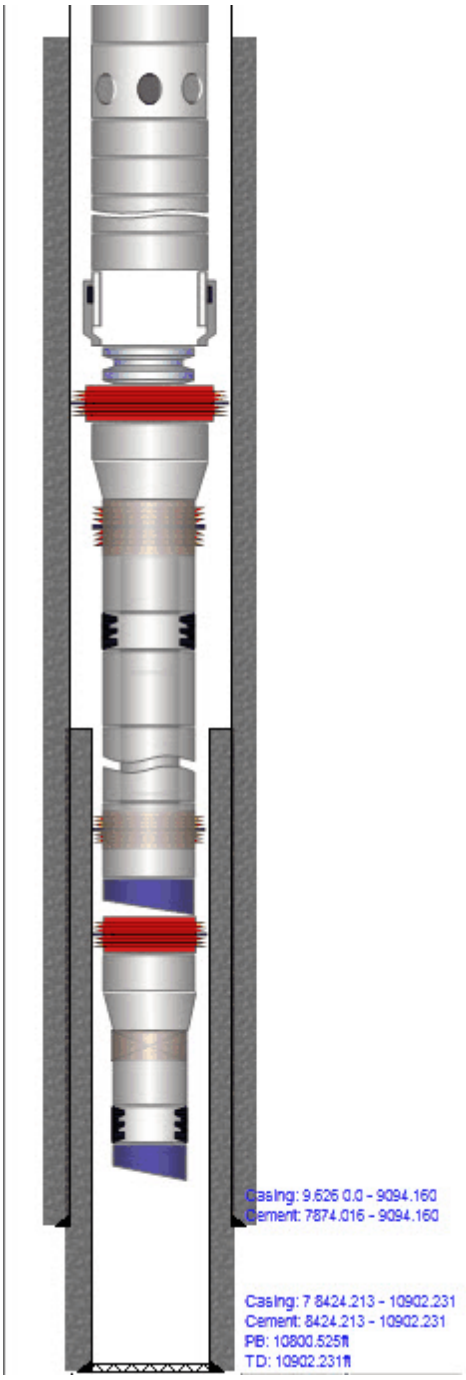
Push the Delete button after highlighting a row in the list.

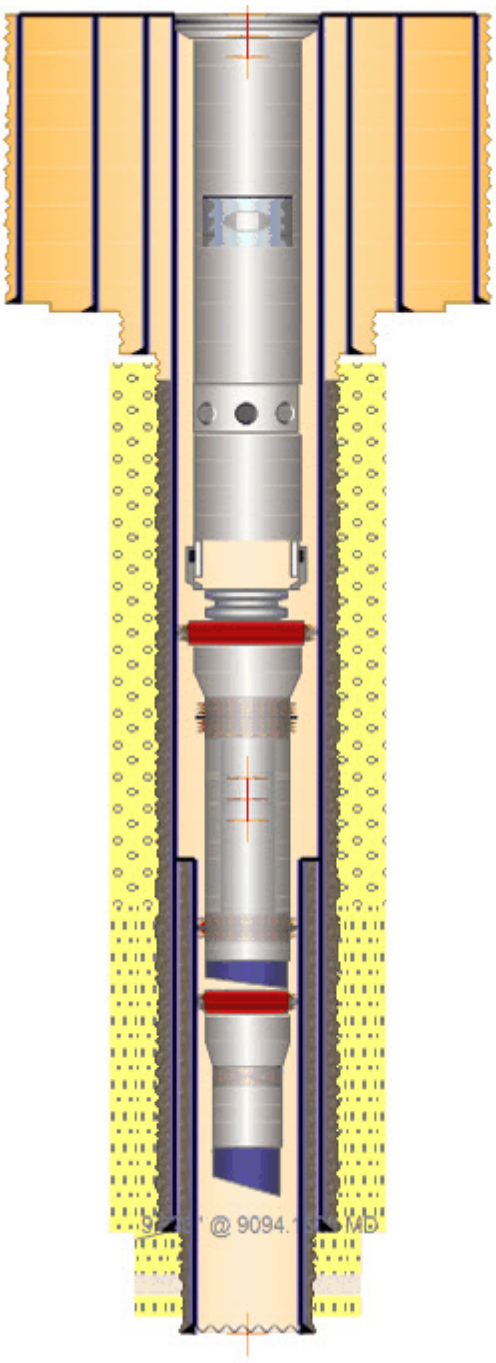
Input field description for Casing Attribute (list and details):

Input field	Description
MD Top	Measured top depth of casing element.
MD Bottom	Measured bottom depth of casing element.
Max OD	The maximum outer diameter of casing element.
ID	Inner diameter of casing element.
Drift ID	The inside diameter of casing element manufacturer guarantees per specifications.
Date Installed	Date when the casing element was installed.
Part number	Part number to current casing element.
Attach to casing / liner	Select the corresponding casing.
Description	Add additional description or comment to current casing element.
Comments	Additional information.

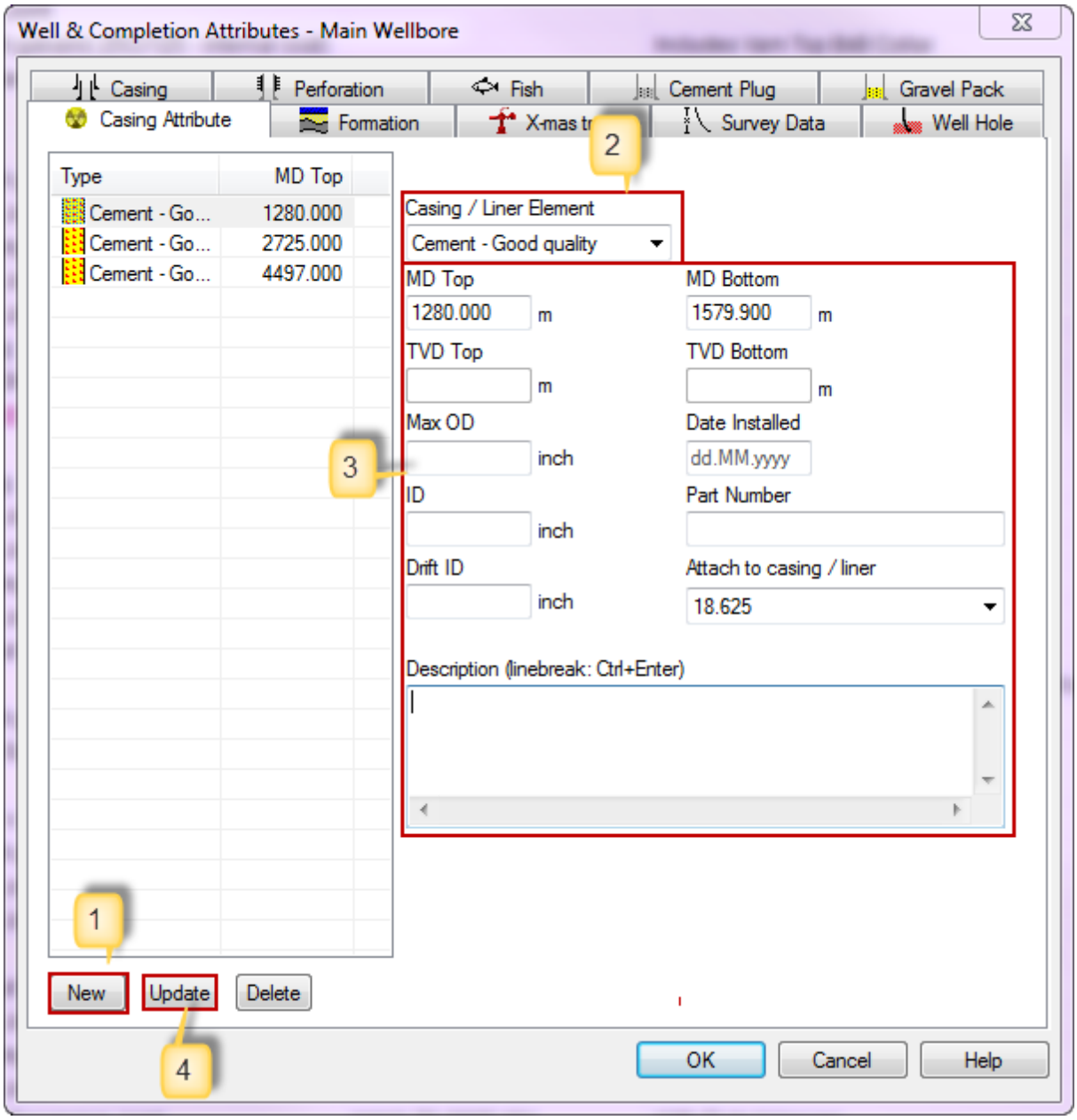
1.4.1.2.3 Casing Cement

The casing cement interval should be registered if present. The cement shows both in Schematic and Sketch.





NOTE: In Schematic mode, you can view the cement for the inner casings only. Go to the Sketch mode to view the cement for all casings.



Register casing cement

1. Select New.
2. Choose the cement type from the Casing/Liner Element Type drop down list.
3. Enter information about casing cement: MD Top / Bottom, Attached to casing / liner and optionally Description.
4. Update the list.

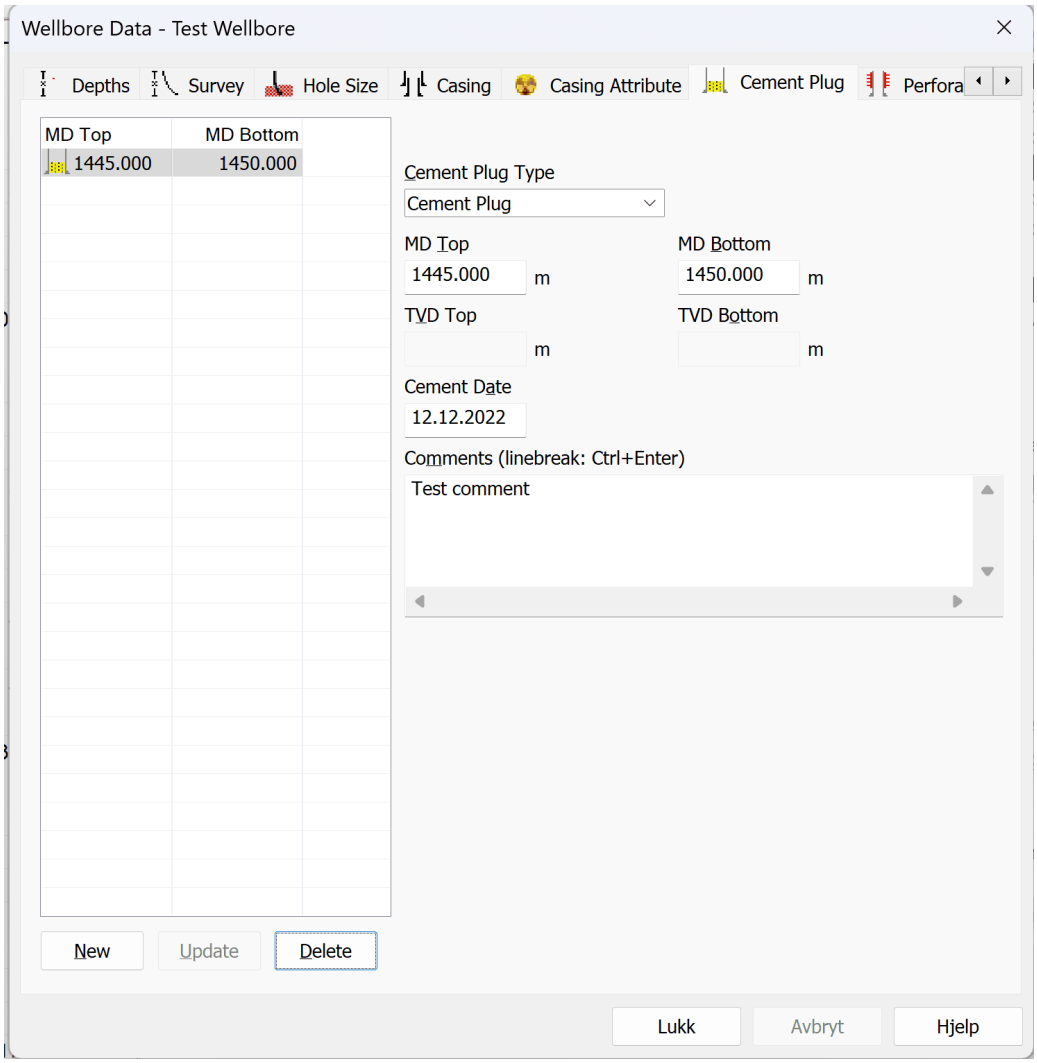
Edit an existing row
Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row
Push the Delete button after highlighting a row in the list.

Input	Description
MD Top	Measured depth (MD) top of the casing cement
MD Bottom	Measured depth (MD) bottom of the casing cement
Max OD	N/A
ID	N/A
Drift ID	N/A
Date Installed	N/A
Part Number	N/A
Attach to casing/liner	Attach the casing cement to a casing/liner. Choose from the drop down list. The drop down list will depend on info typed in Casing tab
Description	A short description about the casing cement (Optional)

1.4.1.2.4 Cement Plug

Add cement plug in tab Cement Plug under Wellbore Data.



1. Choose New.
2. Scroll and chose current Cement Plug Type. Insert information. Mandatory fields are MD top and MD Bottom.
3. Push Update.

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

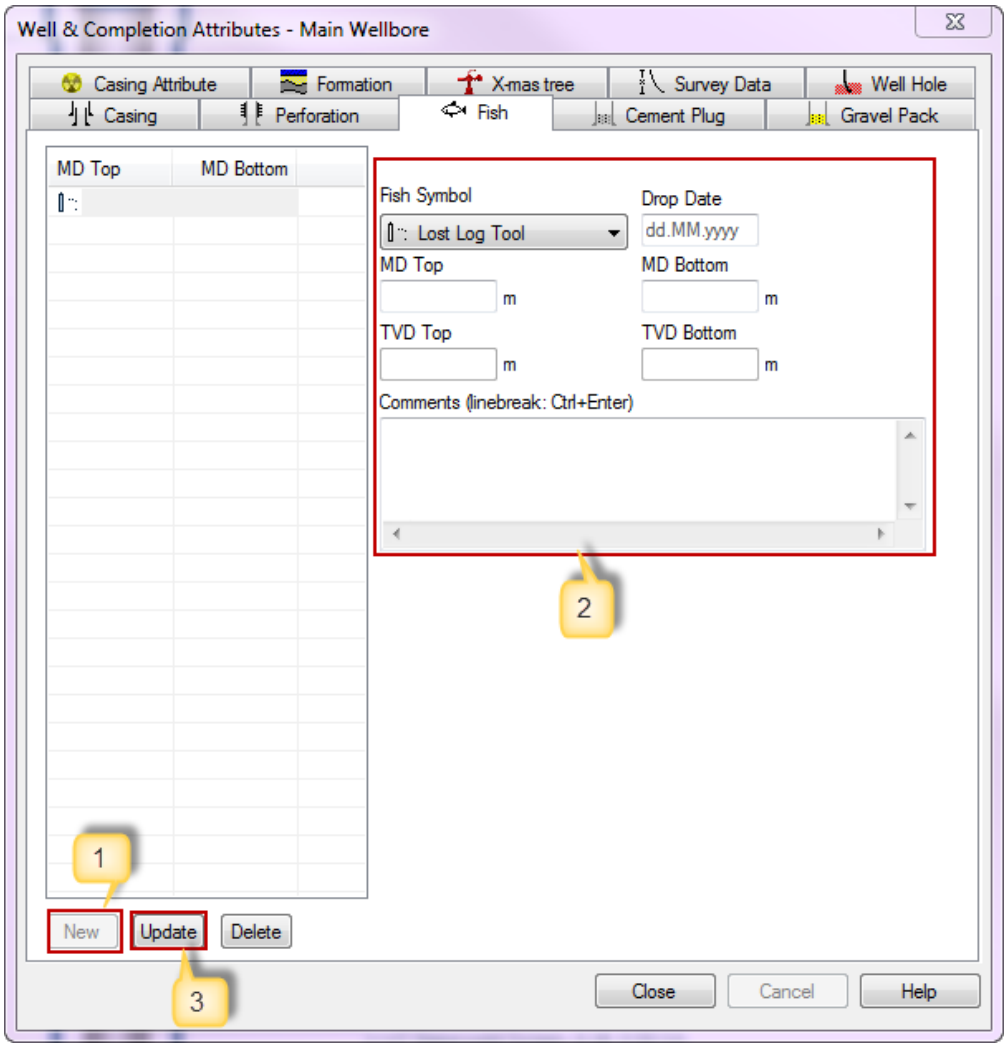
Push the Delete button after highlighting a row in the list.

Input field description for Cement Plug (list and details):

Input	Description
Cement Plug Type	Choose between different cement plug types.
MD Top	Measured top depth of cement plug
MD Bottom	Measured bottom depth of cement plug
Date Cemented	Date when plug was installed
Comments	Add additional comments to current cement interval

1.4.1.2.5 Fish

Add lost items in well in Fish under Well & Completion Attributes.



1. Select New
2. Scroll and choose which symbol to use as an indication for the fish/junk. Mandatory fields are MD top and MD Bottom
3. Update Fish list

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

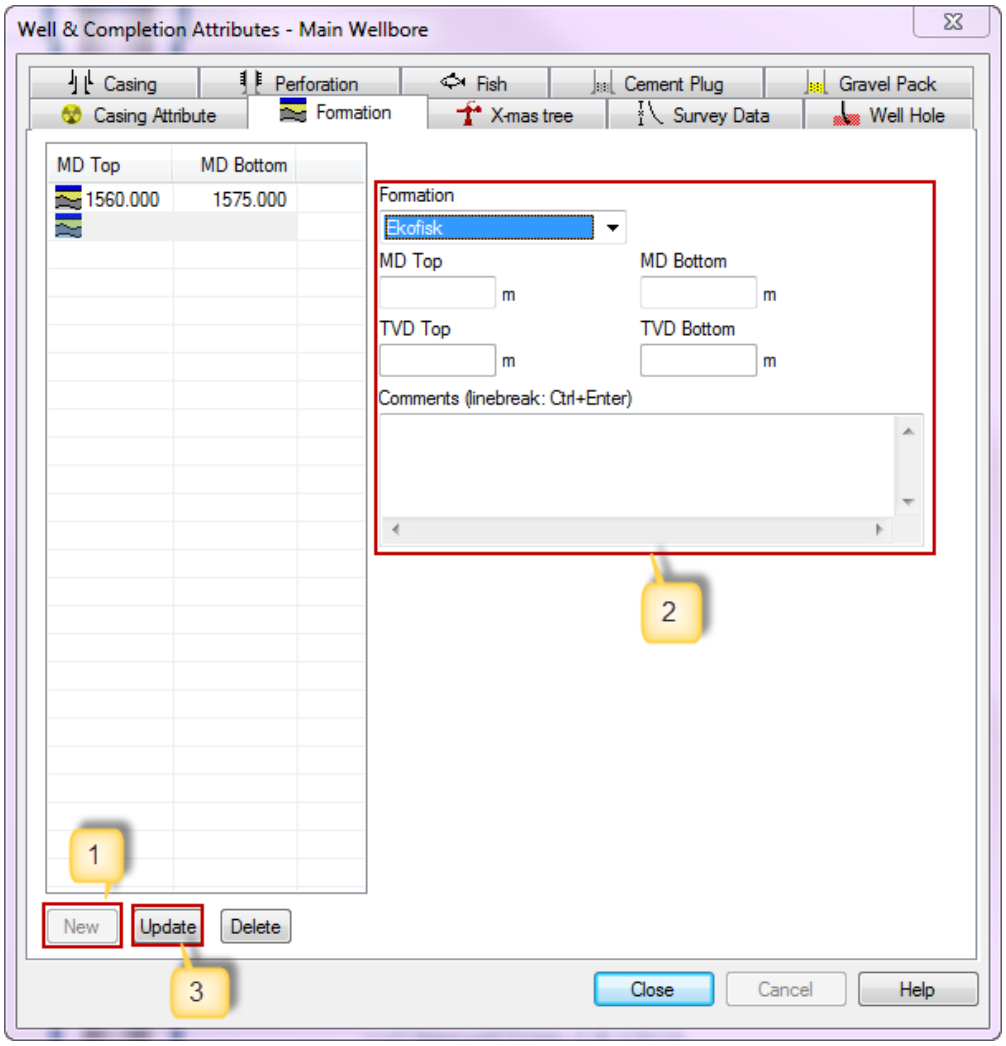
Push the Delete button after highlighting a row in the list

Input field description for Fish (list and details):

Input field	Description
Fish Symbol	Scroll and choose current symbol for lost item
Drop Date	Date when fish was lost/dropped
MD Top	Measured top depth of fish
MD Bottom	Measured bottom depth of fish
Comment	Add additional comments to current cement interval

1.4.1.2.6 Formation

Insert formation information in Formation tab located under Well & Completion Attributes.



1. Select New
2. Scroll and choose formation and fill mandatory field MD Top and MD Bottom
3. Update the formation list

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

Push the Delete button after highlighting a row in the list

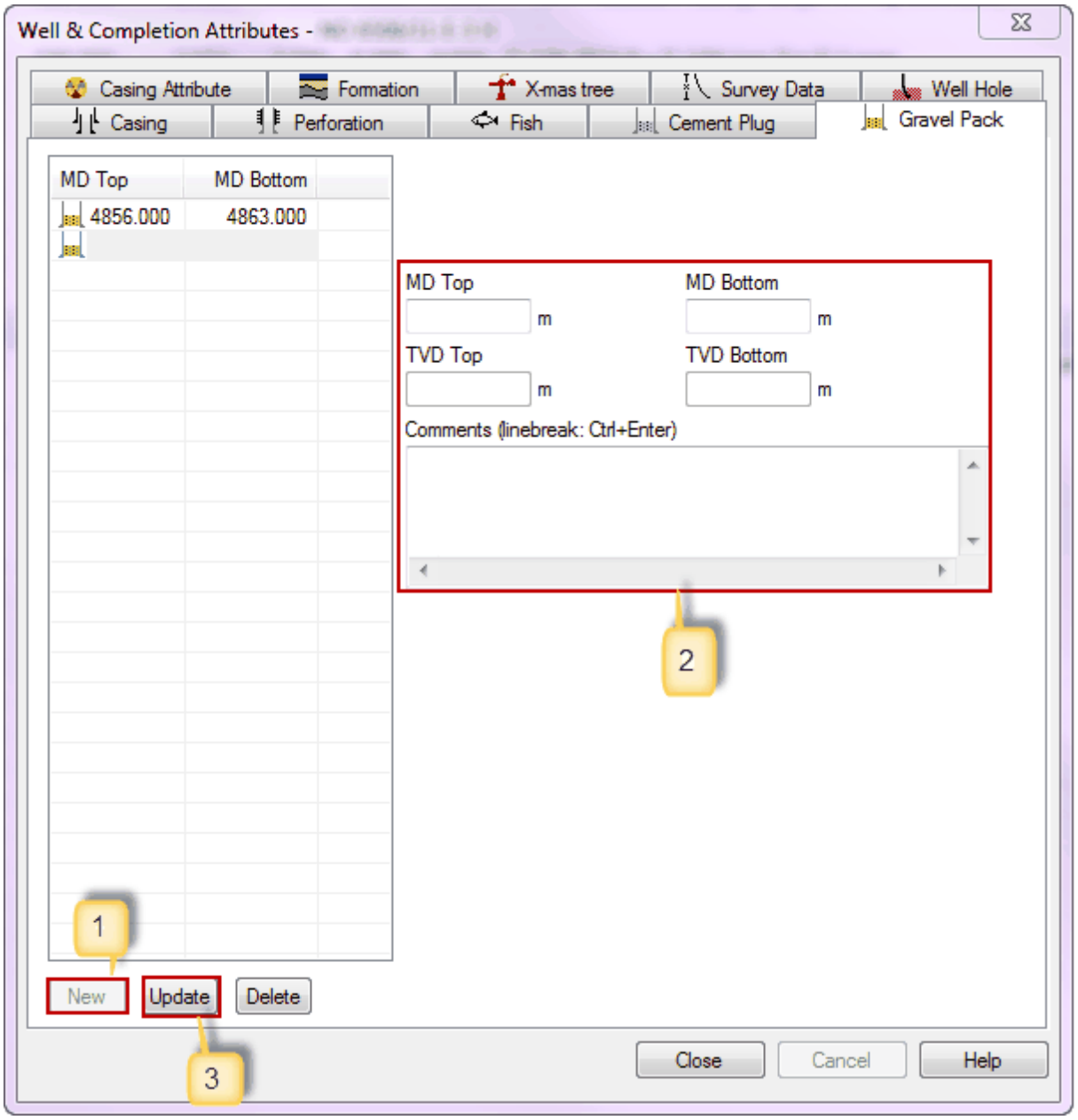
Input field description for well hole (list and details):

Input field	Description
Formation	Scroll and choose current formation
MD Top	Measured top depth of formation
MD Bottom	Measured bottom depth of formation
Comments	Add additional comments to current formation top

NOTE: Should a formation missing from the drop-down list, please contact the CSD System Administrator to add it to the system.

1.4.1.2.7 Gravel Pack

Gravel Pack is locate under Well & Completion Attributes. Register Gravel Pack interval under this tab. This will be indicated with a yellow colored on the schematic:



1. To enter a new row, push the New button below the list.

2. Enter information such as MD Top, MD Bottom and Comments

3. Update the Gravel Pack interval

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

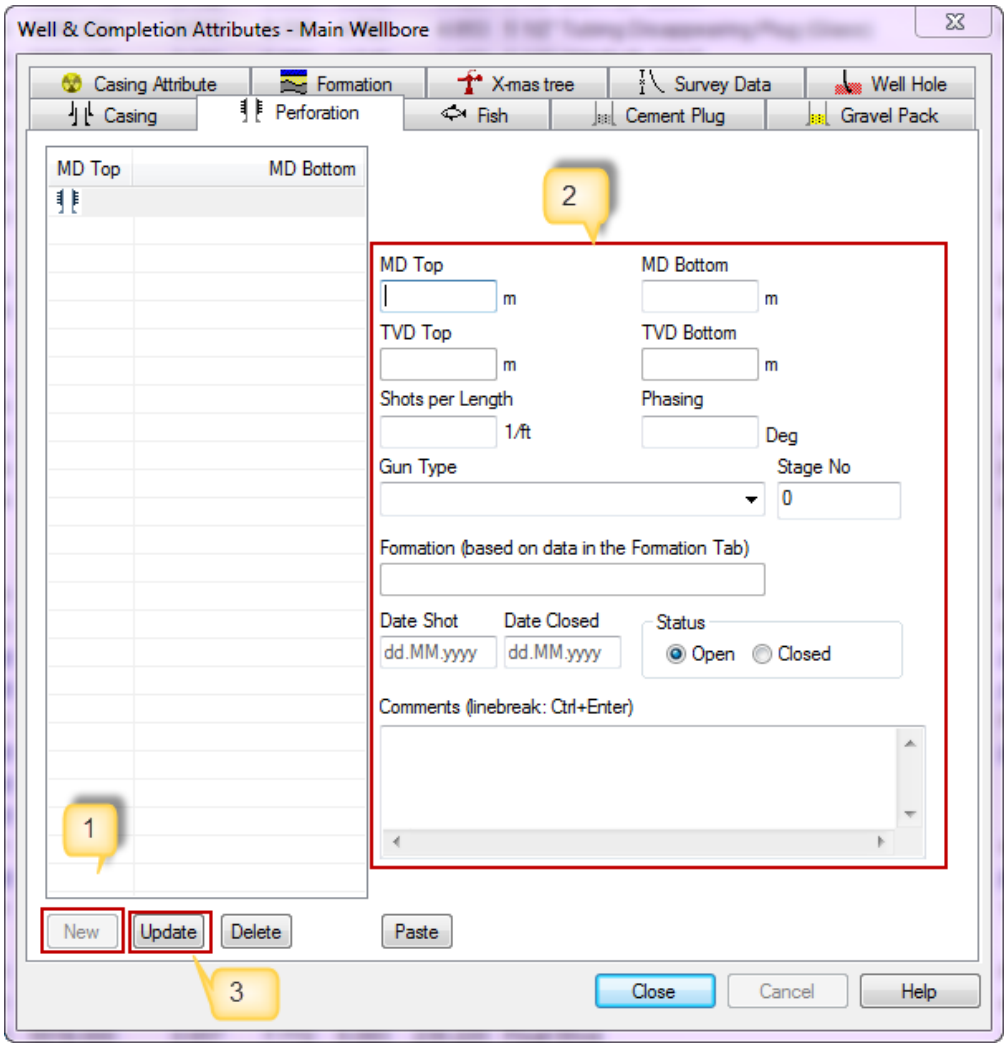
Delete a row
Push the Delete button after highlighting a row in the list

Input field description for gravel pack (list and details):

Input	Description
MD Top	Measured top depth of gravel pack
MD Bottom	Measured bottom depth of gravel pack
Comments	Add additional comments to current cement interval

1.4.1.2.8 Perforation

Perforation interval can be inserted under tag Perforation in Well & Completion Attributes. Under Perforation tab you will see all perforation intervals, also the closed ones.



Insert perforation interval:

1. Select New.
2. Enter information about the perforation interval. Mandatory fields are MD top, MD bottom and status of the well.
3. Update the perforation list.

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

Push the Delete button after highlighting a row in the list.

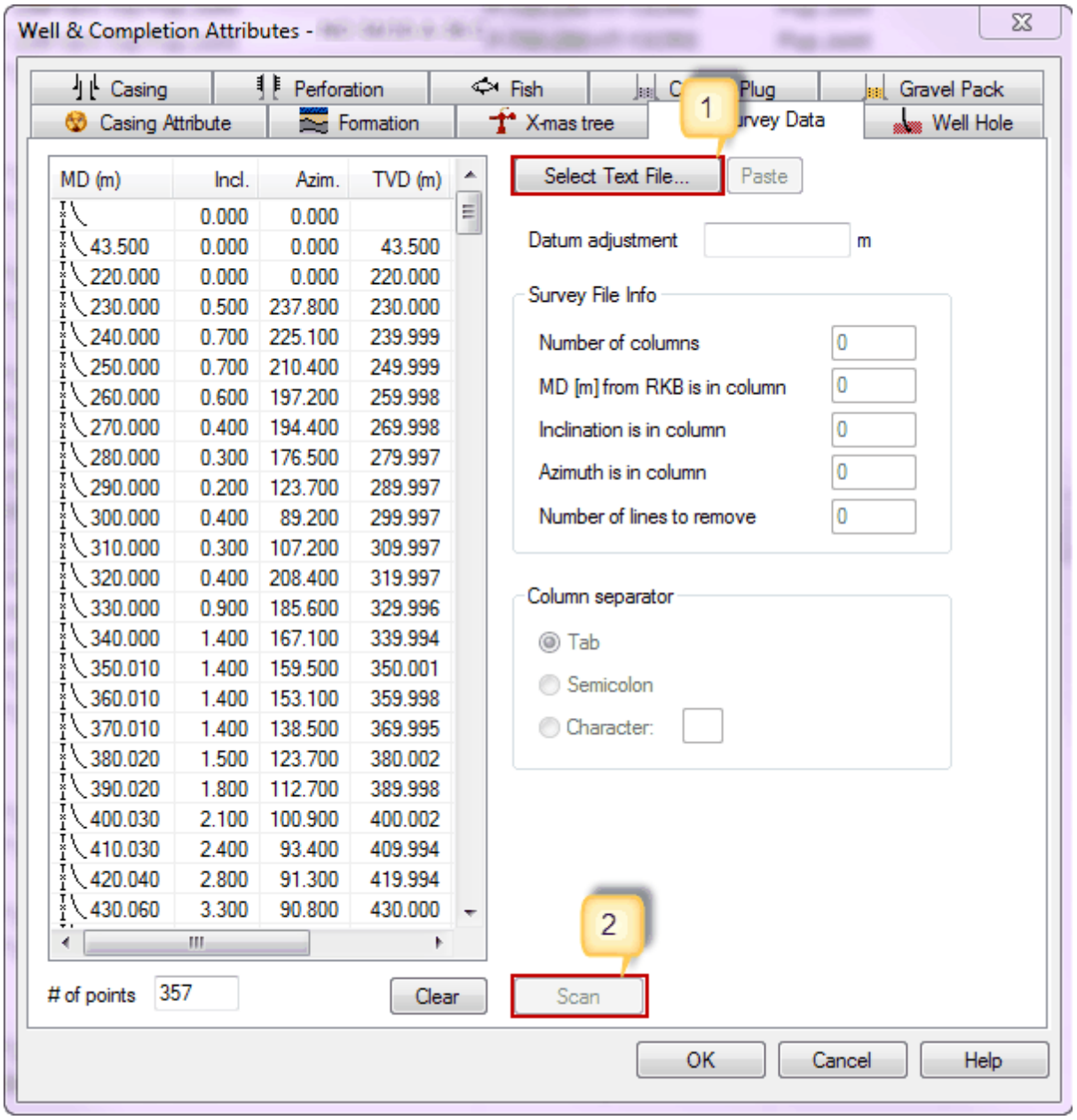
Input field description for perforation (list and details):

Input field	Description
MD top	Measured top depth of perforation interval
MD bottom	Measured bottom depth of perforation interval
Shoots per Length	Number of shoots per length unit
Phasing	Angle from one gun hole to another in the gun
Gun type	Used gun type in current perforation interval. Select from drop down list. This list is updated by the manager
Date Shoot	Date when perforation was shot.
Date Closed	Date when the perforation interval was sealed
Status	Status of the perforation interval as open or closed
Comments	Add additional comments for current perforation interval in comment field

1.4.1.2.9 Survey data

Survey data is special in Completion Attributes context, because it doesn't influence the Schematic in any way. It deviates from the standard layout of all the other dialog boxes in this group. Here you can import survey data. The inclination and TVD will be calculated for each element. You can also use the survey data to calculate all TVD depths. Survey data can be imported from a text file. TVD and the angle (inclination) to each element are calculated using these data. The MD, inclination and azimuth columns must be part of the survey file.

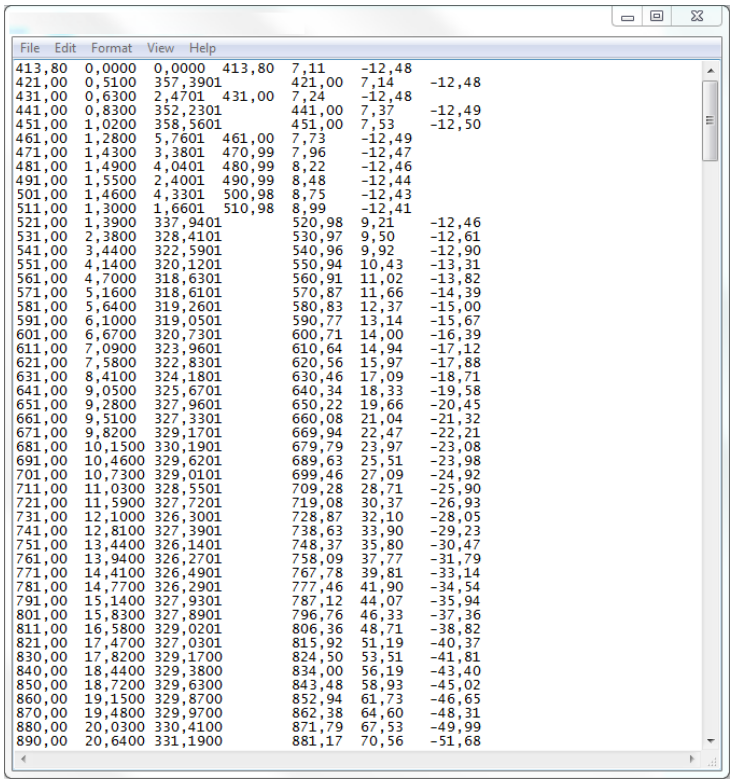
Transferring survey as a Text File



1. Choose Select Text File… Find current Survey data. Note that this must an ASCII (text) file with the columns delimited with tab, space or another character.

2. Press Scan to import survey data for this wellbore.

Example of the text file format:

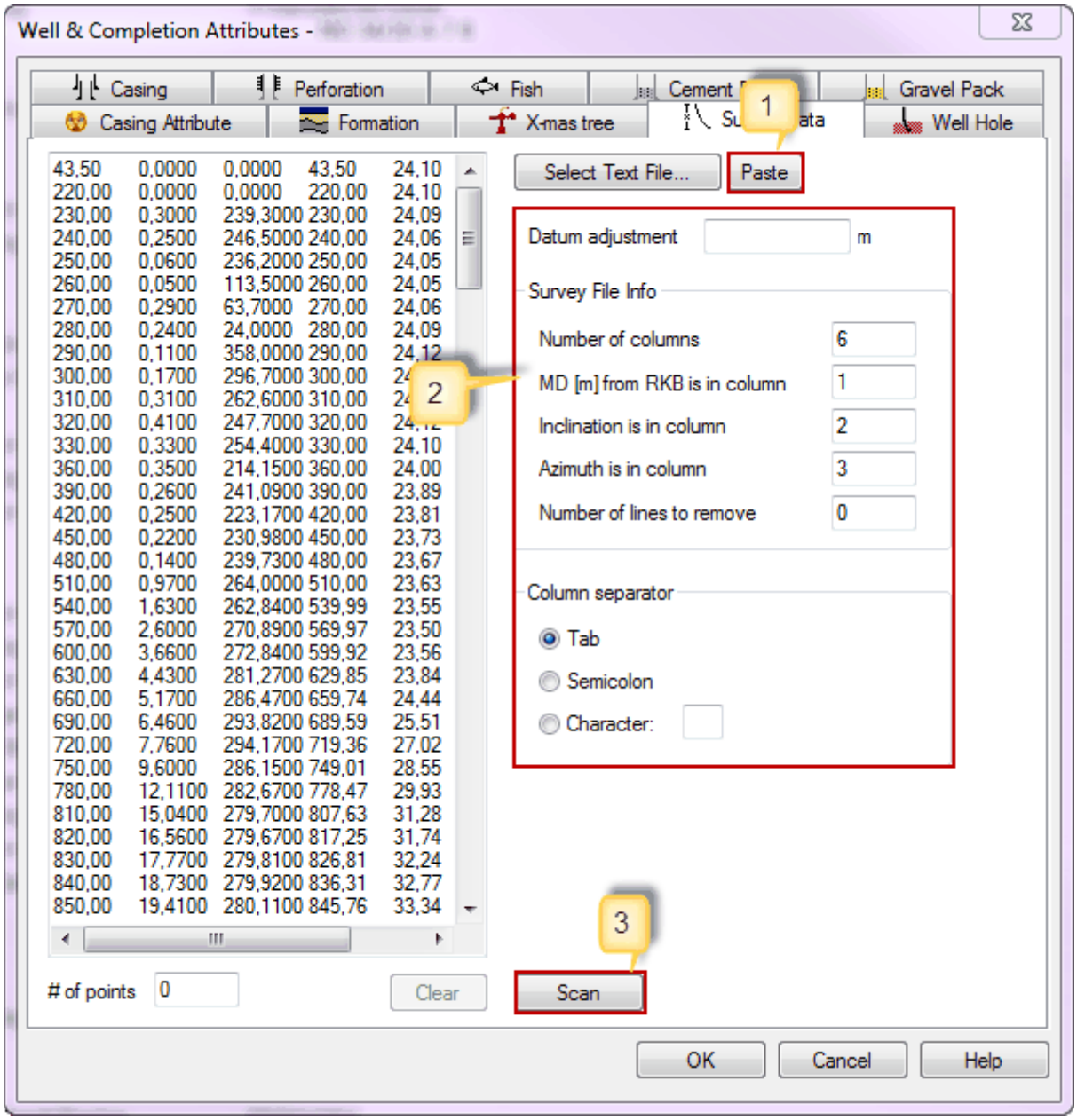


File Edit Format View Help

413,80	0,0000	0,0000	413,80	7,11	-12,48	
421,00	0,5100	357,3901		421,00	7,14	-12,48
431,00	0,6300	2,4701	431,00	7,24	-12,48	
441,00	0,8300	352,2301		441,00	7,37	-12,49
451,00	1,0200	358,5601		451,00	7,53	-12,50
461,00	1,2800	5,7601	461,00	7,73	-12,49	
471,00	1,4300	3,3801	470,99	7,96	-12,47	
481,00	1,4900	4,0401	480,99	8,22	-12,46	
491,00	1,5500	2,4001	490,99	8,48	-12,44	
501,00	1,4600	4,3301	500,98	8,75	-12,43	
511,00	1,3000	1,6601	510,98	8,99	-12,41	
521,00	1,3900	337,9401		520,98	9,21	-12,46
531,00	2,3800	328,4101		530,97	9,50	-12,61
541,00	3,4400	322,5901		540,96	9,92	-12,90
551,00	4,1400	320,1201		550,94	10,43	-13,31
561,00	4,7000	318,6301		560,91	11,02	-13,82
571,00	5,1600	318,6101		570,87	11,66	-14,39
581,00	5,6400	319,2601		580,83	12,37	-15,00
591,00	6,1000	319,0501		590,77	13,14	-15,67
601,00	6,6700	320,7301		600,71	14,00	-16,39
611,00	7,0900	323,9601		610,64	14,94	-17,12
621,00	7,5800	322,8301		620,56	15,97	-17,88
631,00	8,4100	324,1801		630,46	17,09	-18,71
641,00	9,0500	325,6701		640,34	18,33	-19,58
651,00	9,2800	327,9601		650,22	19,66	-20,45
661,00	9,5100	327,3301		660,08	21,04	-21,32
671,00	9,8200	329,1701		669,94	22,47	-22,21
681,00	10,1500	330,1901		679,79	23,97	-23,08
691,00	10,4600	329,6201		689,63	25,51	-23,98
701,00	10,7300	329,0101		699,46	27,09	-24,92
711,00	11,0300	328,5501		709,28	28,71	-25,90
721,00	11,5900	327,7201		719,08	30,37	-26,93
731,00	12,1000	326,3001		728,87	32,10	-28,05
741,00	12,8100	327,3901		738,63	33,90	-29,23
751,00	13,4400	326,1401		748,37	35,80	-30,47
761,00	13,9400	326,2701		758,09	37,77	-31,79
771,00	14,4100	326,4901		767,78	39,81	-33,14
781,00	14,7700	326,2901		777,46	41,90	-34,54
791,00	15,1400	327,9301		787,12	44,07	-35,94
801,00	15,8300	327,8901		796,76	46,33	-37,36
811,00	16,5800	329,0201		806,36	48,71	-38,82
821,00	17,4700	327,0301		815,92	51,19	-40,37
830,00	17,8200	329,1700		824,50	53,51	-41,81
840,00	18,4400	329,3800		834,00	56,19	-43,40
850,00	18,7200	329,6300		843,48	58,93	-45,02
860,00	19,1500	329,8700		852,94	61,73	-46,65
870,00	19,4800	329,9700		862,38	64,60	-48,31
880,00	20,0300	330,4100		871,79	67,53	-49,99
890,00	20,6400	331,1900		881,17	70,56	-51,68

Copy and Paste Survey

Survey can also be added by copy the survey from an Microsoft Excel file.



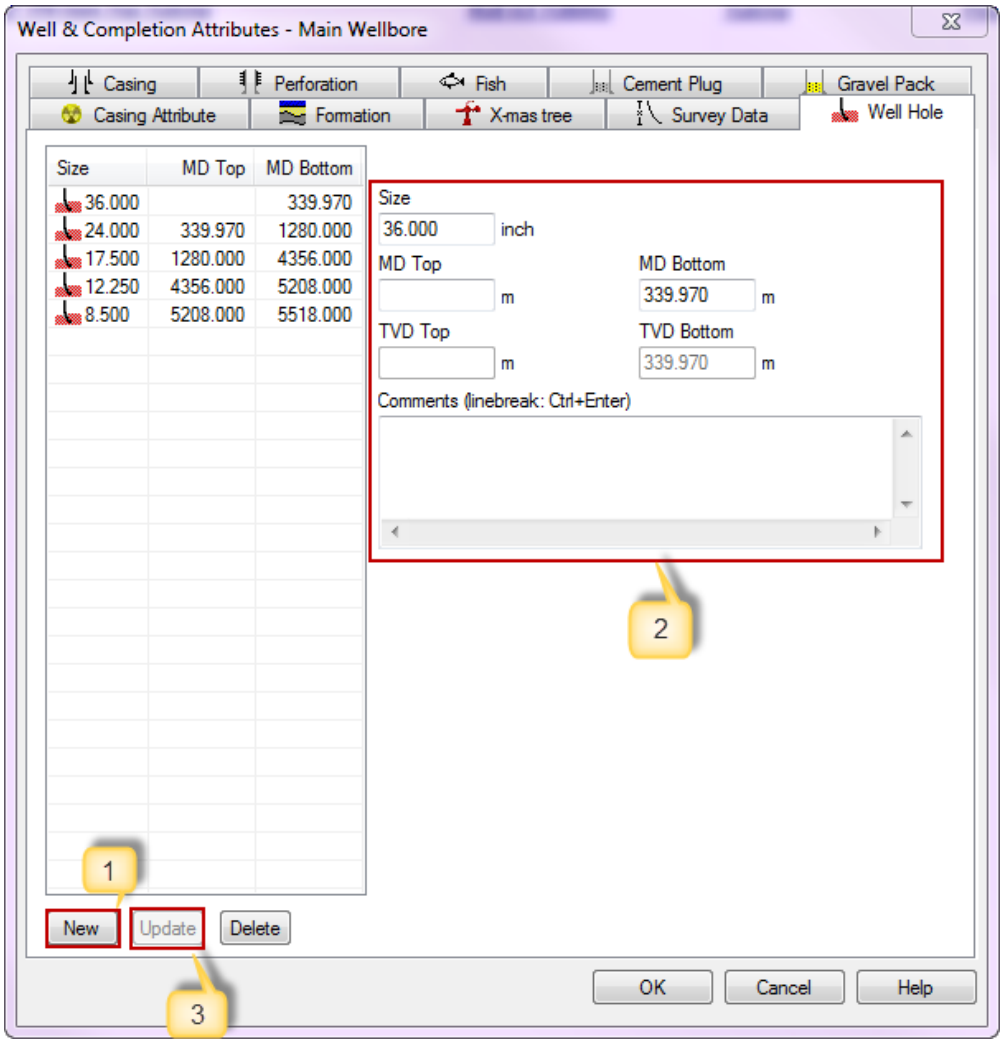
1. After copied the survey file, paste this to Survey data by choosing Paste.

2. Enter/adjust information about the survey file, so CSD will read this correctly.

3. Select Scan to transfer the survey data for the wellbore.

1.4.1.2.10 Well Hole

Register the drilled sections for current wellbore in Well Hole tab under Well & Completion Attributes. Well Hole sections should have a continual flow from one section to another. This involves that MD Bottom from one section should be MD Top to next section.



Insert well hole section:

1. Select New.
2. Enter information about the well hole. Mandatory fields are: Size, MD Top and MD Bottom.
3. Update the Well Hole list.

Edit an existing row

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete a row

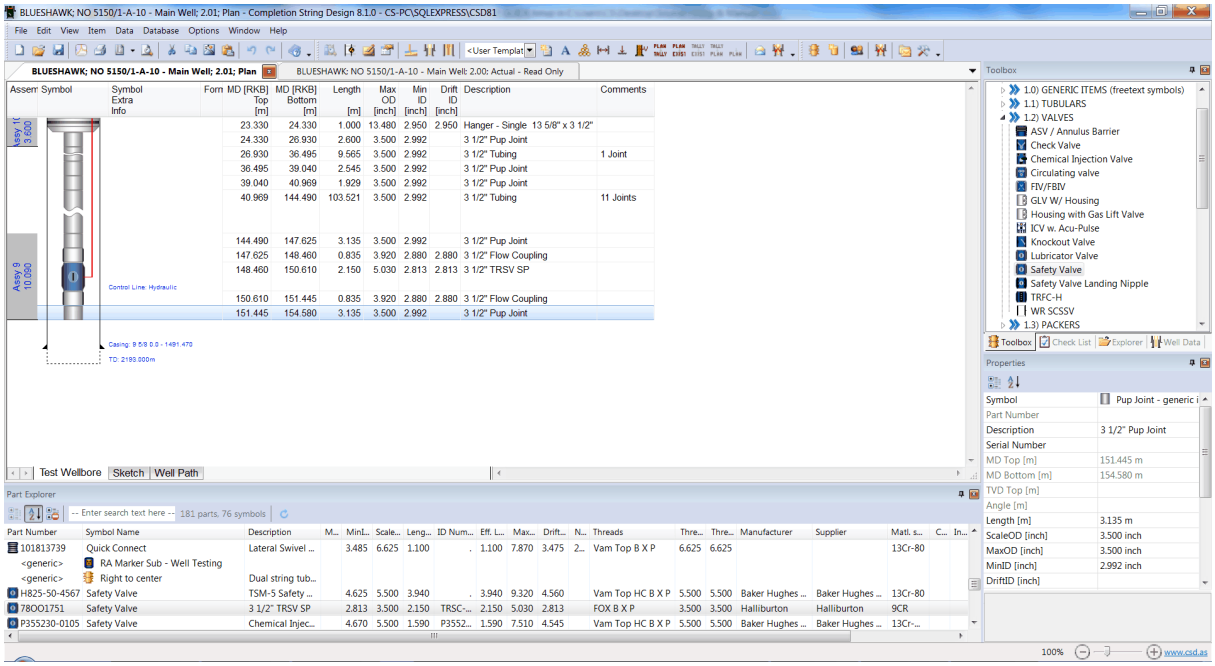
Push the Delete button after highlighting a row in the list.

Input field description for well hole (list and details):

Input field	Description
Size	The largest diameter of the drilled section
MD Top	The measured top depth (MD) for each of the well hole sizes
MD Bottom	The measured bottom depth (MD) for each of the well hole size
Comments	Add additional comments for current well hole section in comment field

1.4.2 Second Step: Build the string

As all data has been entered, you can start building the string.



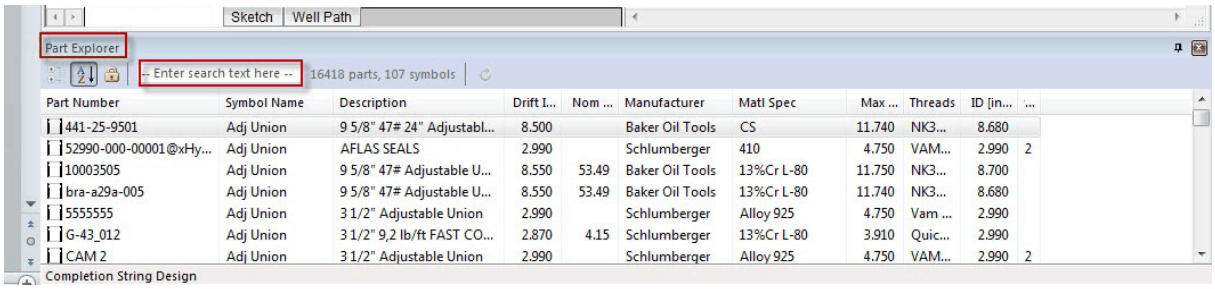
1.4.2.1 Single String

All data has now been entered and you are ready to build the string. What functionality you will use, depends on your plan for the wellbore.

Tip! It is easier to build the string from the top and down, than the other way around.

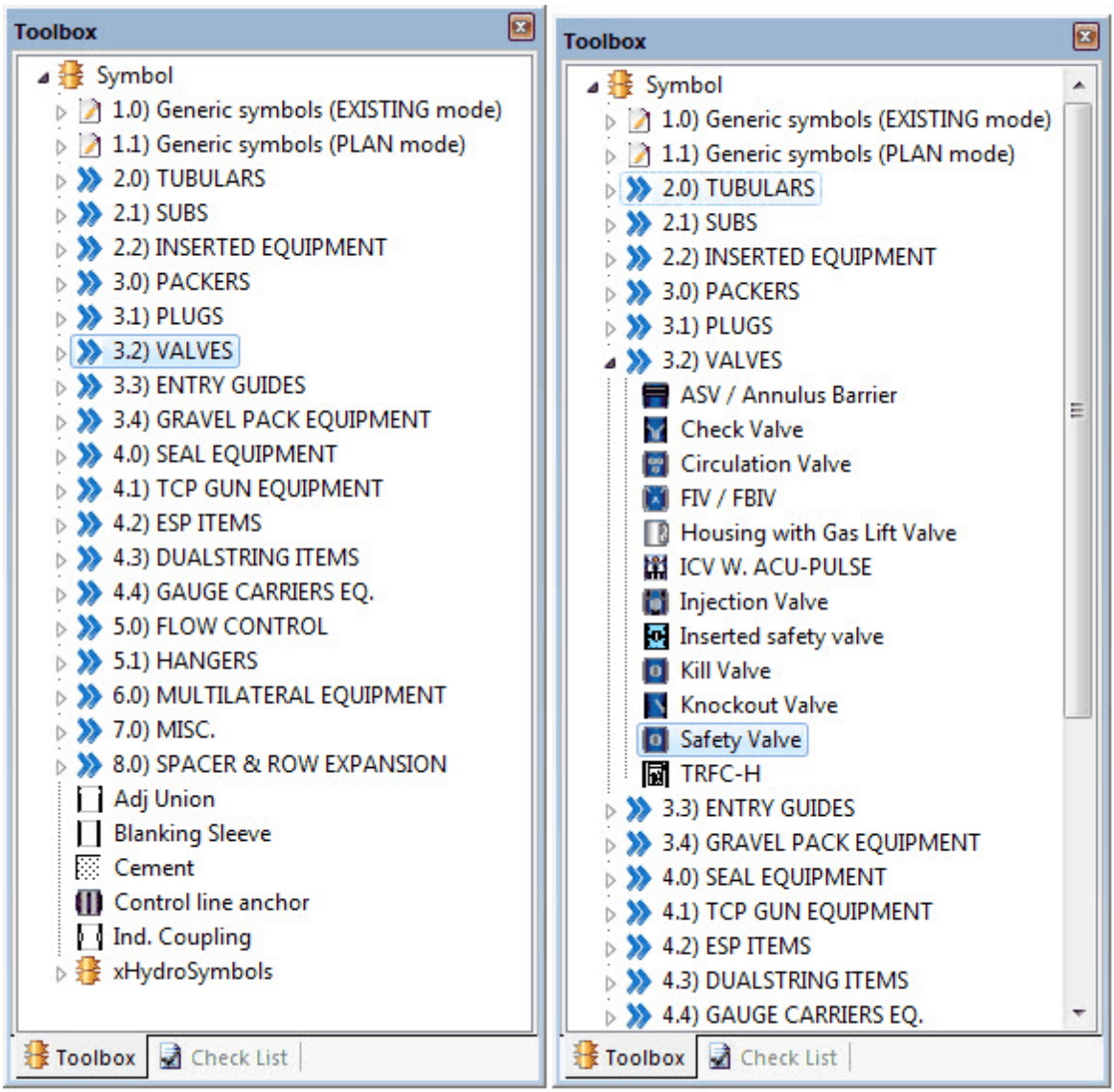
There are 4 different ways to insert a new element:

1. Part Explorer: An easy way to add components to the well. Search for a part by filling in different information (part number, symbol name, description, etc.), and the search will narrow as you type.



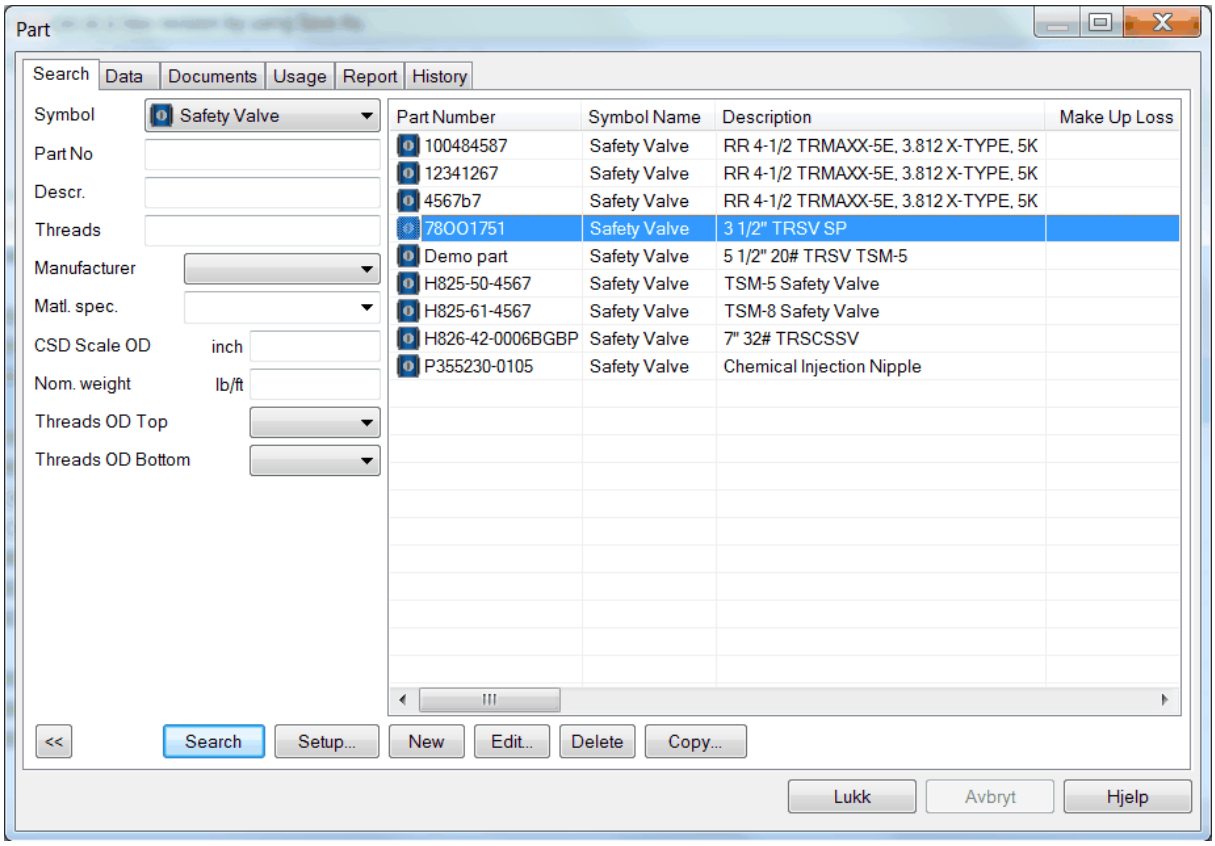
Part Number	Symbol Name	Description	Drift I...	Nom ...	Manufacturer	Matl Spec	Max ...	Threads	ID [in...	...
441-25-9501	Adj Union	9 5/8" 47# 24" Adjustabl...	8.500		Baker Oil Tools	CS	11.740	NK3...	8.680	
52990-000-00001@xHy...	Adj Union	AFLAS SEALS	2.990		Schlumberger	410	4.750	VAM...	2.990	2
10003505	Adj Union	9 5/8" 47# Adjustable U...	8.550	53.49	Baker Oil Tools	13%Cr L-80	11.750	NK3...	8.700	
bra-a29a-005	Adj Union	9 5/8" 47# Adjustable U...	8.550	53.49	Baker Oil Tools	13%Cr L-80	11.740	NK3...	8.680	
5555555	Adj Union	3 1/2" Adjustable Union	2.990		Schlumberger	Alloy 925	4.750	Vam ...	2.990	
G-43_012	Adj Union	3 1/2" 9,2 lb/ft FAST CO...	2.870	4.15	Schlumberger	13%Cr L-80	3.910	Quic...	2.990	
CAM 2	Adj Union	3 1/2" Adjustable Union	2.990		Schlumberger	Alloy 925	4.750	VAM...	2.990	2

2. Drag & Drop-method: The symbols in the toolbox are organized in several levels. If you for instance want to use a valve, you have to press the arrow in from of Valve in the toolbox. A new level will be displayed.



Please note that this is just an example. Organizing of symbols can be different in your company.

Place the cursor in the toolbox on top of the highlighted symbol. Hold down the left-hand mouse button while you drag the symbol into the schematic. When you let go of the mouse button, the Part dialog will appear. You can then use the Part search criteria to find the element you want to insert. When you have found the element, highlight it and push "OK", or double click on the marked line. Note that you can search for elements by using the search fields on the left hand side in the Part dialog box.



Repeat the operation to build the entire string. It is also possible to use Copy & Paste. Copy/Paste functions are located in the Edit menu.

3. Move the cursor to the schematic window. Press the right mouse button and choose New from the menu that appears. The cursor will change (there will be a + sign next to it) and you can now choose where you want to insert the new element. Pressing the left mouse button does this. Part dialog appears and the procedure will be the same as described above. Note that default symbol to be used will be the symbol highlighted in the toolbox.

4. Choose 'New' from the Item menu. The cursor change form and you have to select where the new element shall be placed. This is done by placing the cursor where you want the element to be placed and then press the left mouse button. Note that the default symbol to be used will be the symbol highlighted in the toolbox. Now the dialog box, 'Part' is displayed. To complete, follow the same procedure as for item 1 and 2.

Repeat operations 1, 2, 3 and/or 4 to build the entire string.

Copy & Paste function

Sometimes the same Part Number is used several times. In these situation it is easier to use the copy/paste functions. You can do this in several ways.

1. Highlight one or several rows that you want to copy. Choose Edit, Copy and then Edit, Paste. The cursor will change (there will be a + sign next to the arrow). Use the cursor to choose where you want to insert the element(s). If you want to move the highlighted are, use Edit, Cut and Edit, Paste.

2. Highlight one or several rows that you want to copy. Press the Copy button  and then the Paste button  . The cursor will change (there will be a + sign next to the arrow). Use the cursor to choose where you want to insert the element(s). If you want to move the highlighted are, use the Cut button  and then the Paste button  .

3. Highlight one or several rows that you want to copy. Press Ctrl C (to copy) and then Ctrl V (to paste). The cursor will change (there will be a + sign next to the arrow). Use the cursor to choose where you want to insert the element(s). If you want to move the highlighted area, press Ctrl X (to cut) and Ctrl V (to paste).

4. Highlight one or several rows that you want to copy. Move the cursor inside the marked border and left click. The cursor will change (there will be a square next to it).Press down the left mouse button to drag it to a new position. A dotted line will show you where the elements will be inserted.

1.4.2.1.1 Item Properties

In the following chapter we will take a closer look at Item Properties.

There are several ways to open Item Properties.

1. Right click on a part and choose Item Properties.

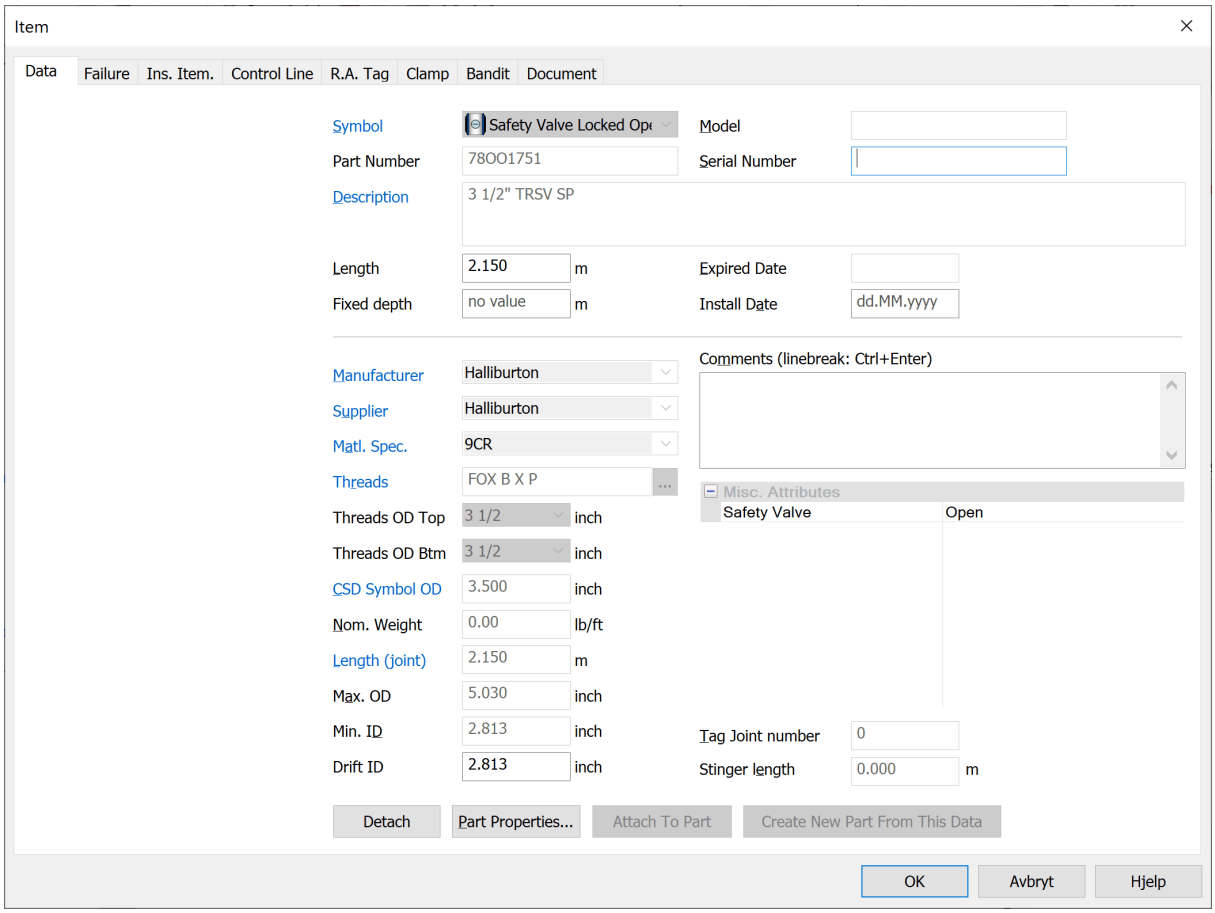
2. Highlight a part in the schematic and click on symbol  in the toolbar.

3. Highlight an item in the schematic and choose Item, Item Properies... in the CSD top menu.

1.4.2.1.1.1 Data

To get a simple overview of the data for an item, choose Item Properties... from the item short menu. This dialog box let the user change length, drift ID, serial number and comments for the selected item, as well as setting fixed depth for the item.

NOTE: If the part is a generic part, all dialog boxes are open for editing.



In the Data tab, you find four buttons with different functionality. These are called: **Detach**, **Part Properties, Attach To Part** and **Create New Part From This Data.** The way you use these are as follows:

Detach:
You use the Detach button when you want to make a new generic part with the same specifications as an existing registered part. You highlight the item, choose Item Properties... and press the Detach button. It then copies all the information from the existing part except for the symbol, which you have to specify from a list of **generic part** symbols. Making it a generic part then means that the specifications now are editable, and that the item is not stored in the database.

NOTE: This will only affect the specific highlighted element in this completion, and not the original part registered in the equipment database.

This is useful if you for instance have a well where there have been used registered parts with part numbers only, and you need to make changes to a number of pup joints. You can then detach the pup joints that you need, to edit and make changes on them as any other generic parts.

NOTE: The Detach button is only active when you are working on a part registered in the

equipment database.

Part Properties:
Push this button to enter the Part dialog, containing all data for the chosen database part.

NOTE: The Part Properties button is only active when you are working on a part registered in the equipment database.

Attach To Part:
Attach to part is used if you want to change a generic part with a part from the equipment database. The part will then be changed to the selected part from the equipment database with its belonging, specifications and part number. But the length, serial number, comments and so on will remain as it was on the generic part.

NOTE: The Attach To Part button is only active when you are working on a generic item.

Create New Part From This Data:
This functionality is used when you want to change a generic item into a new part with a new part number in the equipment database. You click the button and will then be taken to the Part dialog. Go to the Data tab and you will see that CSD has copied all the specifications from the generic item. You may edit any specifications and you will have to give it a unique Part number and choose symbol.

The Create New Part From This Data button is only active when you are working on a generic part.

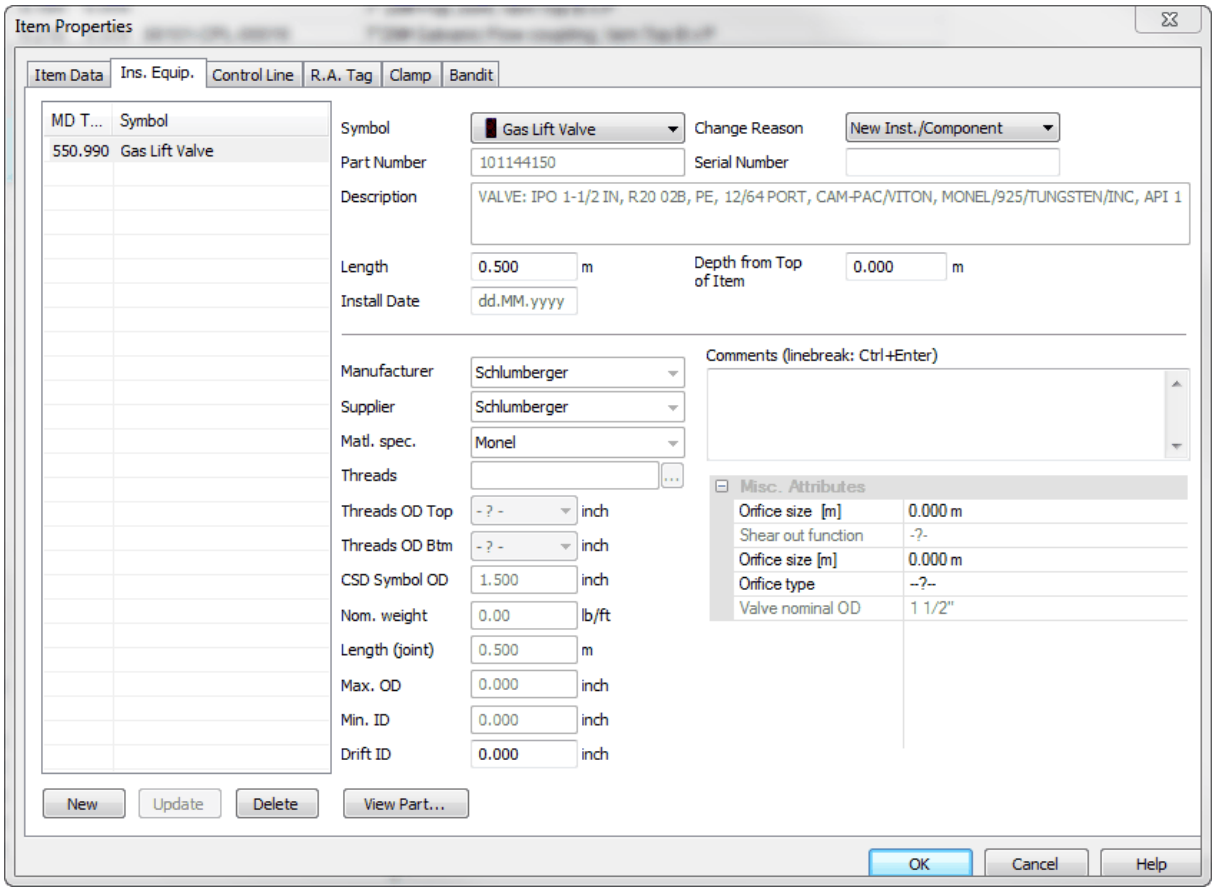
Input field	Description
Description	A short description of the part
Symbol	Drop down list with all available symbols in CSD.
Manufacturer	Manufacturer of the part
ID/SAP Number	Internal number
Supplier	Supplier of the part
Matl. spec.	Material Specification
Serial Number	Serial Number is a unique number that identifies one specific component in one specific well completion
CSD Scale OD	Choose a scaling OD for part. Usually the same as Threads OD Top (inch)
Nom. weight	Nominal weight to the part
Length (joint)	Length of part per joint

Makeup loss	Loss of length due to coupling
Max OD	The maximum outer diameter (OD)
Min ID	Inner diameter
Drift ID	The inside diameter that manufacturer guarantees per specification
Threads	Also known as coupling.
Threads OD Top	Outer diameter at top
Threads OD Bottom	Outer diameter at bottom
Fixed Depth	Lock an element to a specific depth

NOTE: If you change or add information in the Item Data dialog, it affects this well only. It will not affect any other completions also using this part.

1.4.2.1.1.2 Inserted Equipment

It is possible to insert an element into another element:



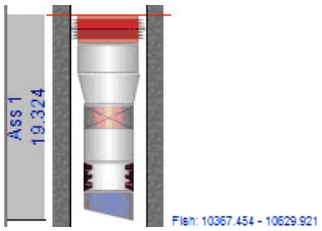
1. Select New.
2. Select Symbol. After selecting symbol you will be redirected to the Part Explorer. Find the current part.
3. Fill in rest of the info about inserted equipment.
4. Update the list.

Edit an existing insert equipment
Highlight one of the rows in the list. This will bring all the data concerning the row into the right-hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete insert equipment
Push the Delete button after highlighting a row in the list.

Input field	Description
Depth from Top of Item	Length from top of the part which you wish to inserted an element into.
Equipment Length	Length of the inserted equipment
Serial Number	Serial Number is a unique number that identifies one specific component in one specific well completion
Date Installed	Date when the inserted equipment was installed.
Drift ID	The inside diameter of inserted equipment manufacturer guarantees per specifications
Comments	Add additional comments to current inserted equipment

The inserted equipment is scaled relative to the length of the element that it's inserted into. Data belonging to the inserted equipment will be presented on a separate row beneath the outer element. Insert equipment must have partnumber, thought this must be registered in the equipment database.



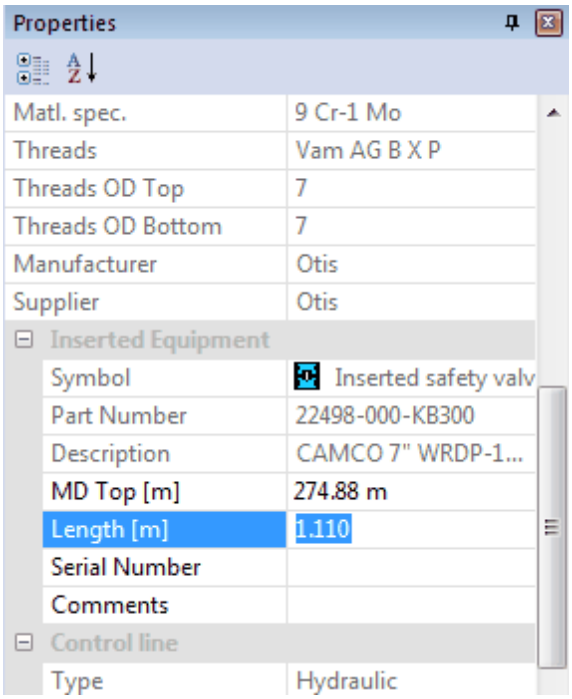
9875.328	3.314	4.000		5.880	5 1/2" 17# "FA-1" Packer 85FA47*40
9878.642	5.348	4.778	4.653	5.500	5 1/2" 20# Vam Pup Joint
9883.990	0.689	3.958	3.833	5.866	5 1/2" 20# x 4 1/2" 12.6# Vam, X-over
9884.678	8.005	3.960	3.830	4.880	4 1/2" 12.6# Vam Pup Joint
9885.007	3.281			4.530	5 1/2" 23# Mono-Lock
9892.684	1.312	3.759	3.759	4.961	4 1/2"11.2# "R"Bottom NO-GO Seat Nipple 3.81
9893.996	0.656	3.920	3.830	5.000	4 1/2" 13,5# WL.Guide W/Full Mule Shoe

The inserted equipment is scaled according to it's nominal OD. The schematics will therefore look strange if you insert a 7” element into a 4 1/2” element.

Insert Equipment with Ctrl-Function

It is also possible to add inserted element from the part explorer. Do as follows:

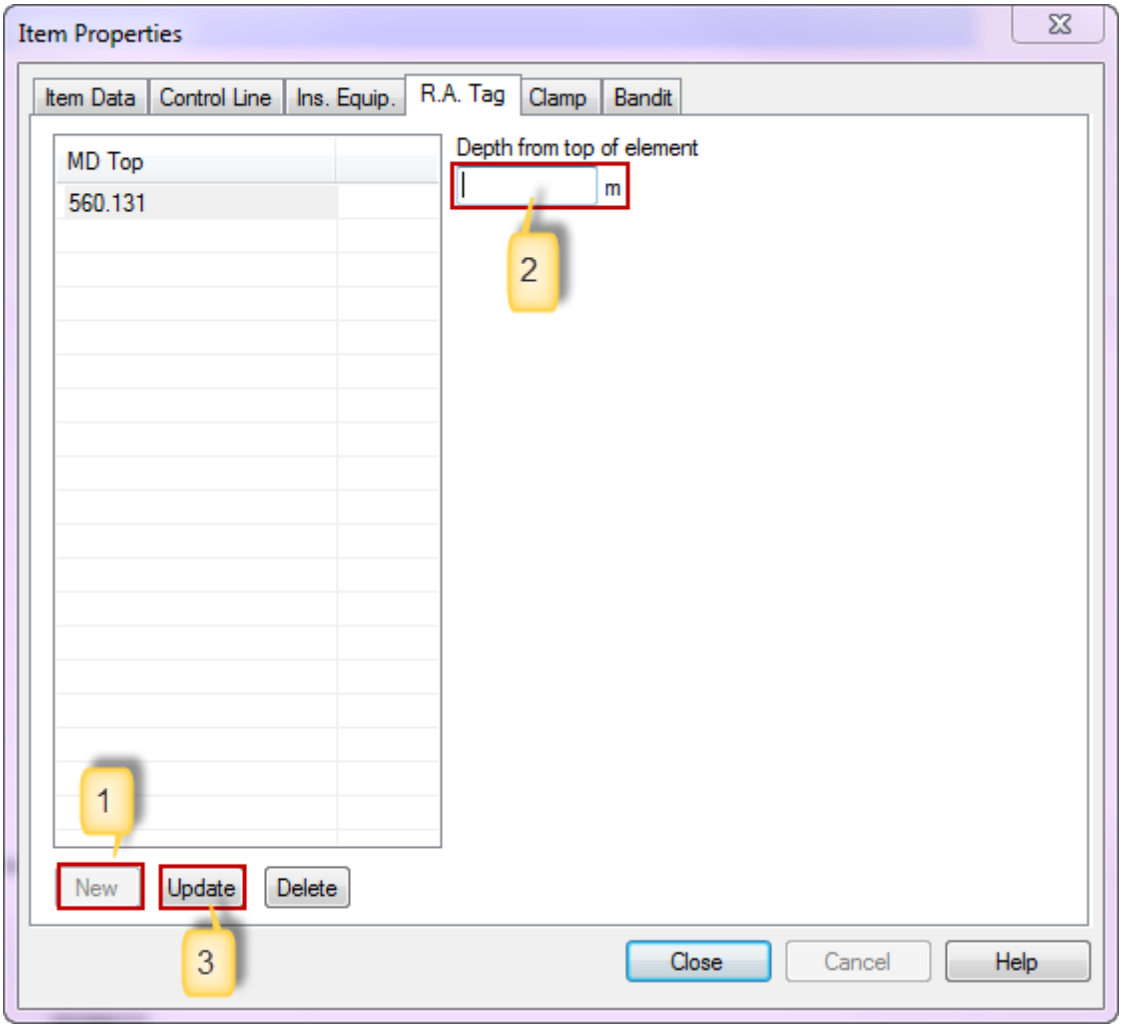
1. First find the element you want to insert in the Part Explorer.
2. While holding down the Ctrl button on your keyboard, drag and drop it **above** the item you want to insert it into.
3. Insert the relative information in the Properties dialog found at the lower right of the CSD main screen. (Scroll down to the Inserted Equipment section and write directly into the grid.)



NOTE: If you are missing the Properties dialog from your CSD main screen, you can enable it by choosing View, Toolbars and Docking Window and check Properties from the CSD top menu.

1.4.2.1.1.3 R.A Tag

To register radioactive tags on an element, do the following. Highlight an element and push the  , or you can right click and choose Item Properties. Choose the R.A. Tag tab.



1. Select New.

2. Register depth relative to the top of element.

3. Update the list.

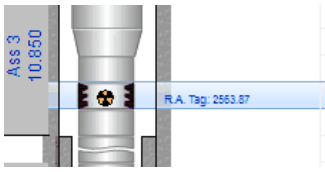
Edit an existing insert equipment

Highlight one of the rows in the list. This will bring all the data concerning the row into the right-

hand side of the dialog box. Change whatever needs to be changed. The changes will be saved when you push Update, OK or go to another tab.

Delete insert equipment
Push the Delete button after highlighting a row in the list.

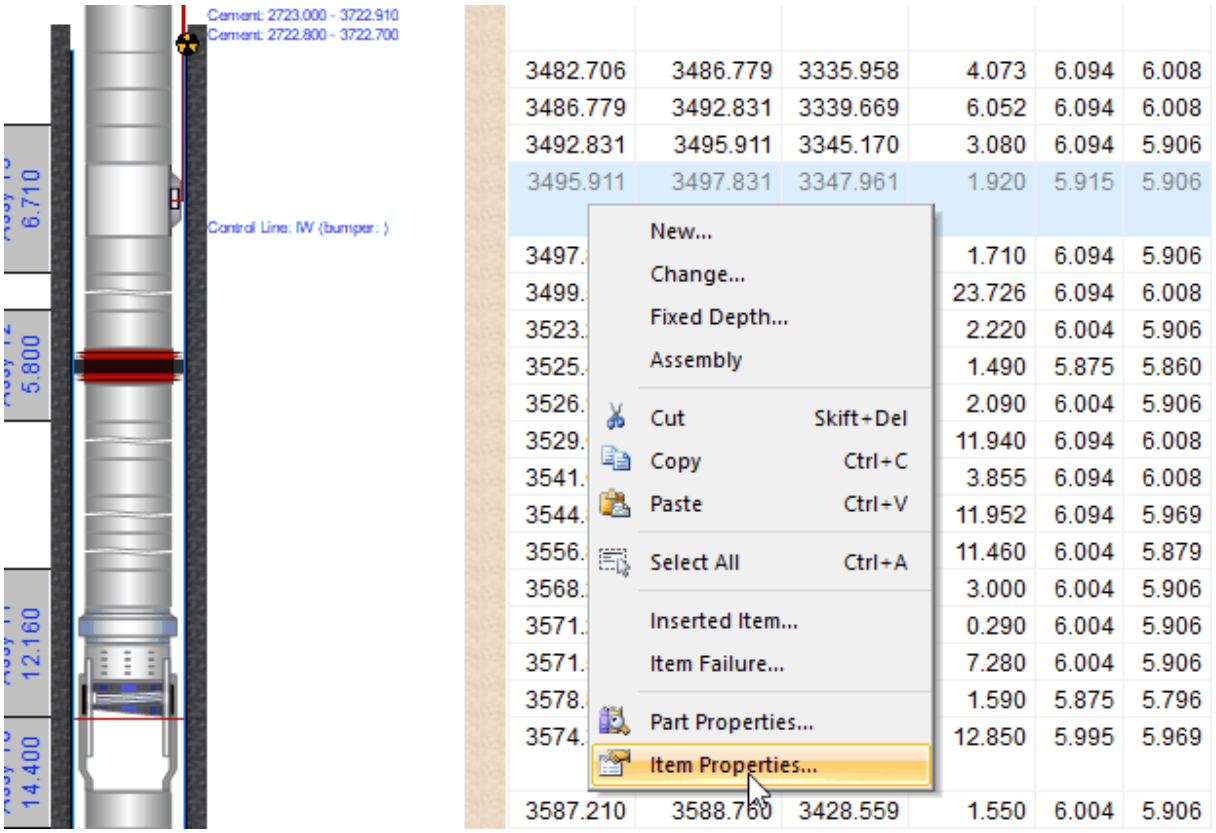
Note the MD Top of the R.A Tag is showing in the left column and can also be modified in the Properties dialog along with a comment. When a R.A. Tag is registered it is indicated in the schematic with a symbol as seen in the figure below:



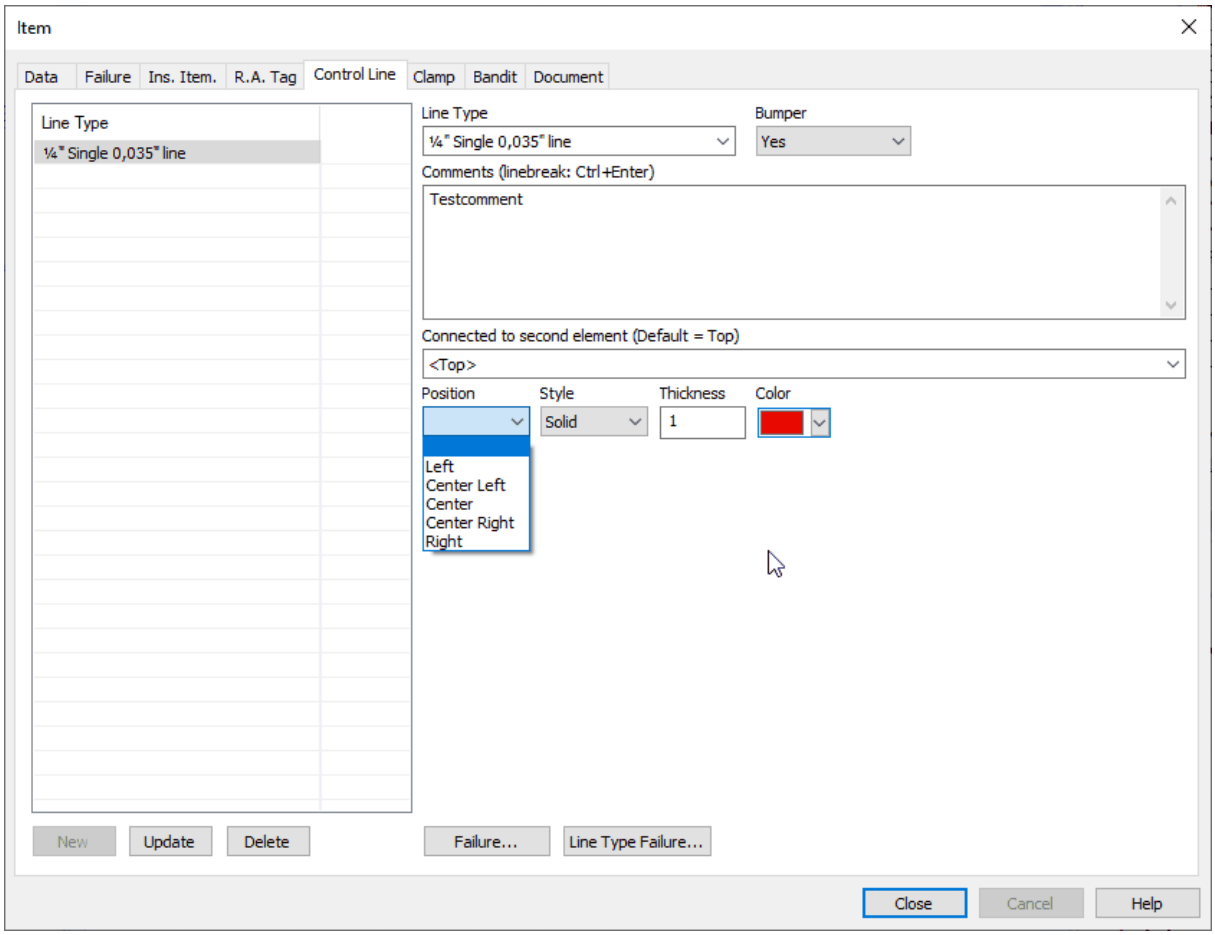
2558.03	2560.19	2.160	7.000	7.000	6.094	5.969	7" 32# Pup Joint P X P
2560.19	2560.41	0.220	7.681	7.000	4.778	4.653	7" 35# x 5 1/2" 20# X-over
2560.41	2563.57	3.160	6.075	5.500	4.670	4.545	5 1/2" 23# Pup Joint
2563.57	2564.09	0.520	6.050	5.500	4.313	4.309	5 1/2" 20# "F" Top Non Ported Seat. Nipple
2564.09	2567.21	3.120	6.075	5.500	4.670	4.545	5 1/2" 23# Pup Joint
2567.21	2591.85	24.640	6.075	5.500	4.670	4.545	5 1/2" 23# Tubing

1.4.2.1.1.4 Control Line

Right click a completion string element and choose “Item Properties…”



In the Control Line tab, press New, choose a Line Type, choose Bumper Yes/No (mandatory).

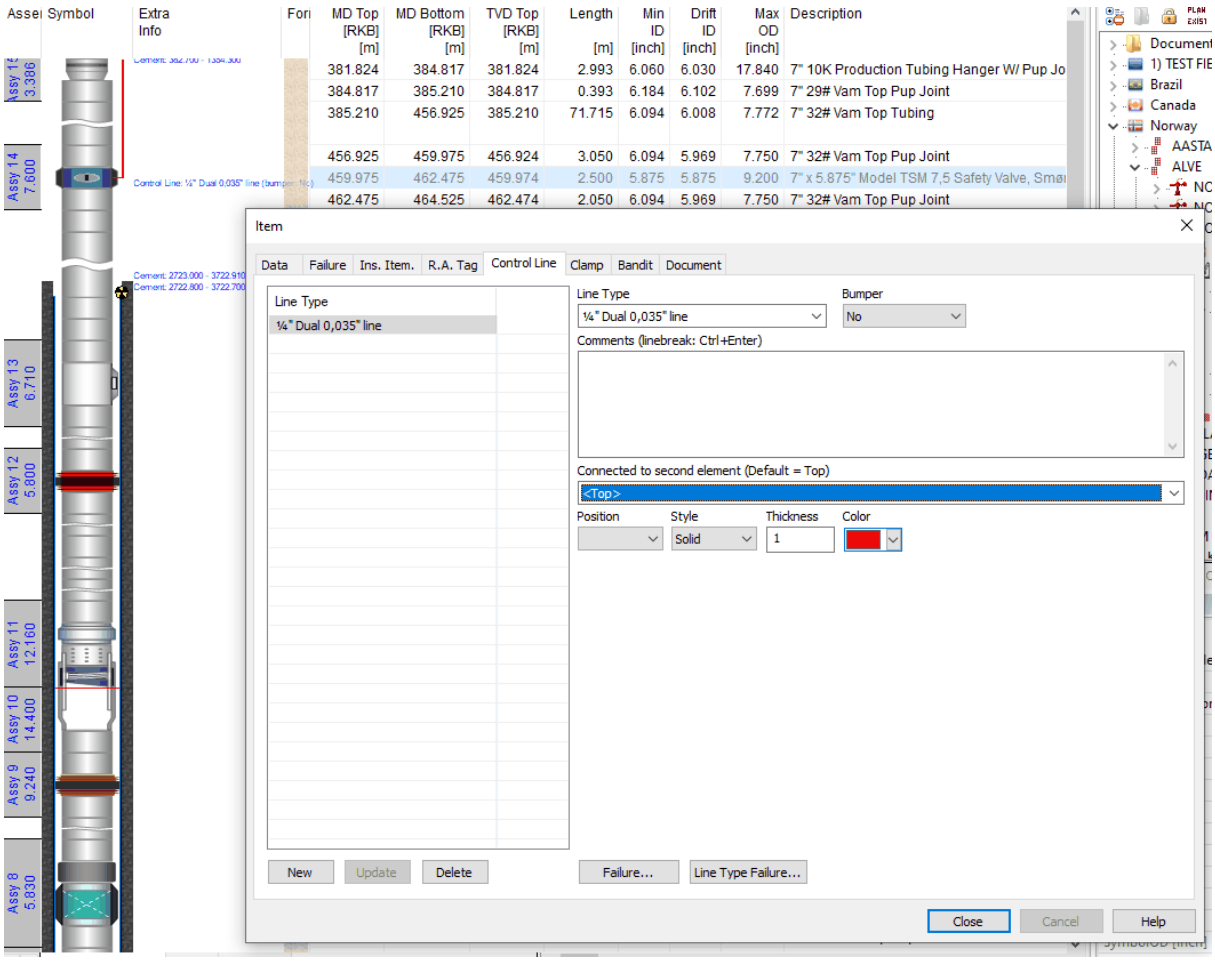


Optional: You can enter comments, and choose/change the position, style, thickness, and color of the line.

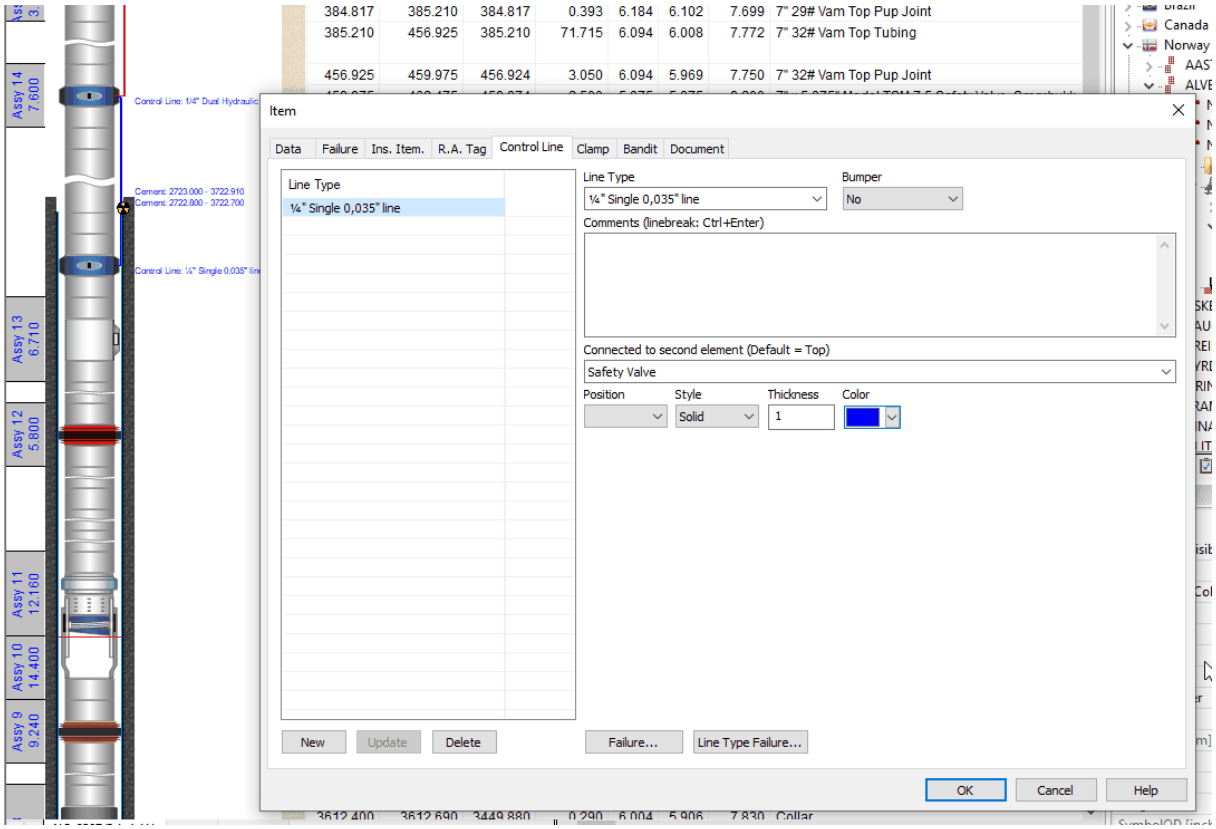
A control line can be connected to as many elements in the completion as it has internal lines. Remember to choose the correct type of line - single, dual, triple or quadruple - according to number of internal lines.

Dual Control Line example:

Enter a dual control line from surface (<Top>) to the upper element being operated by this line (safety valve):



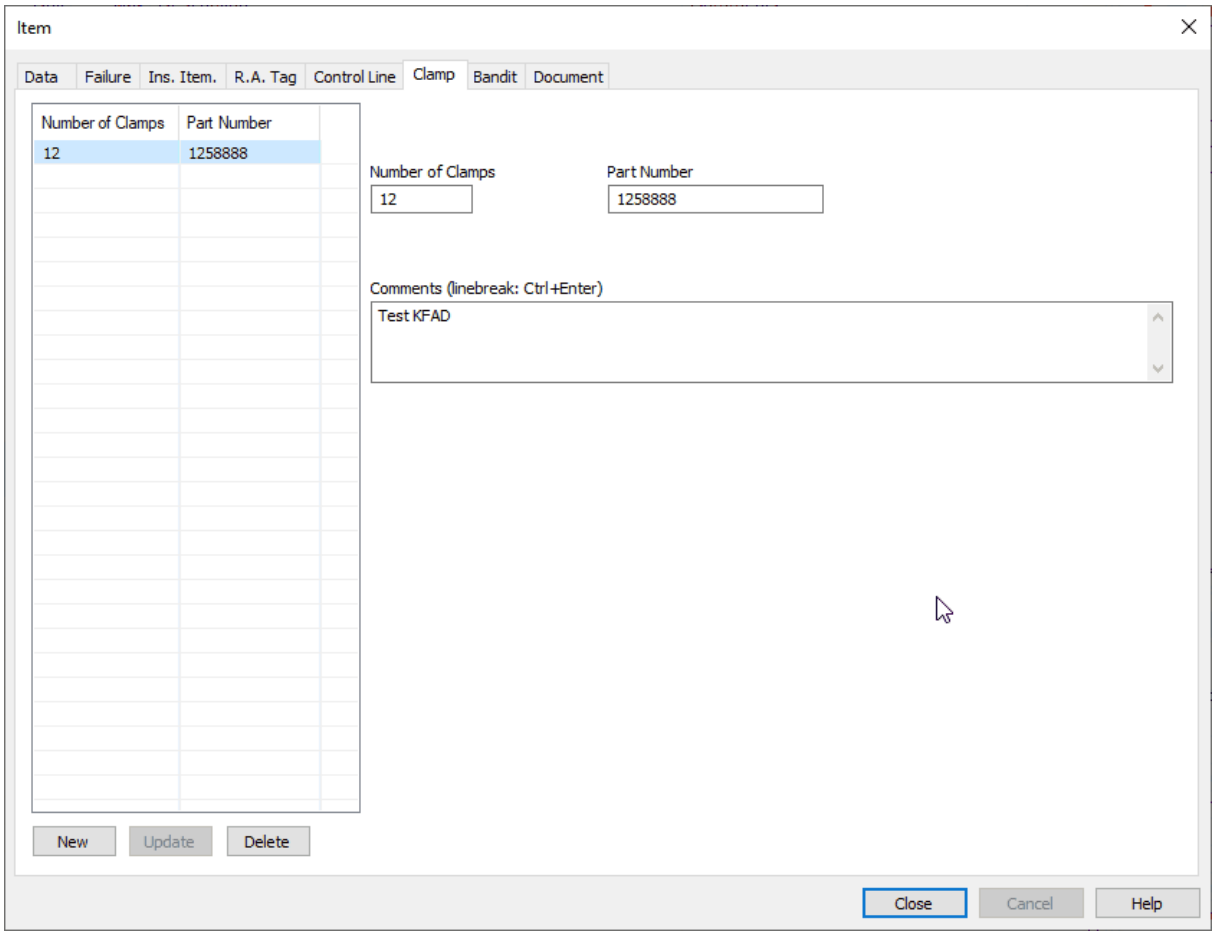
Enter a continuation of the dual control line by selecting the corresponding single control line for the lower element, connecting to the upper element (safety valve) instead of keeping the default connection to <top>:



NOTE: Talk to your System Manager if you want the list of types updated.

1.4.2.1.1.5 Clamp

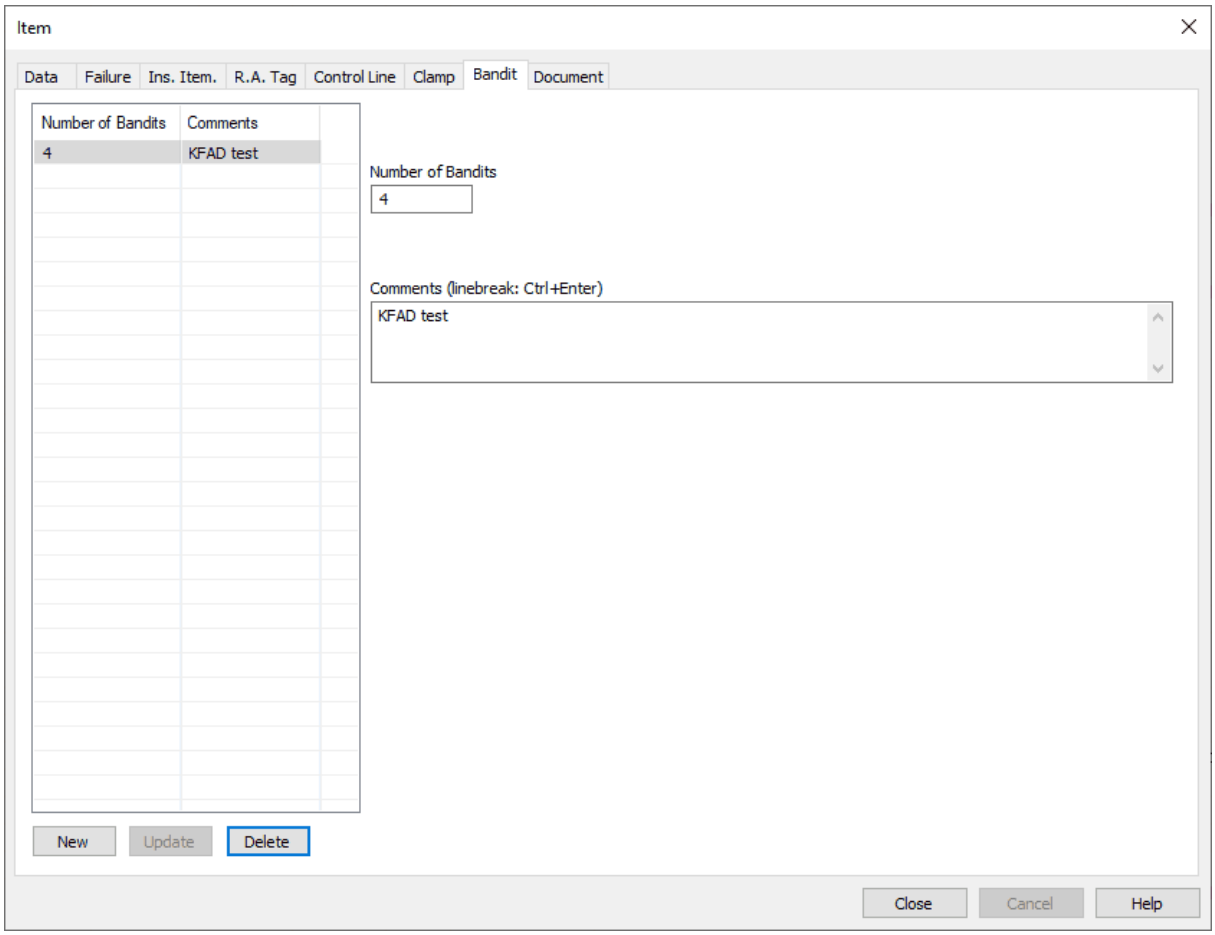
You can enter number of clamps, part number and comments in the Clamp tab:



NOTE: There is no graphical presentation of clamps.

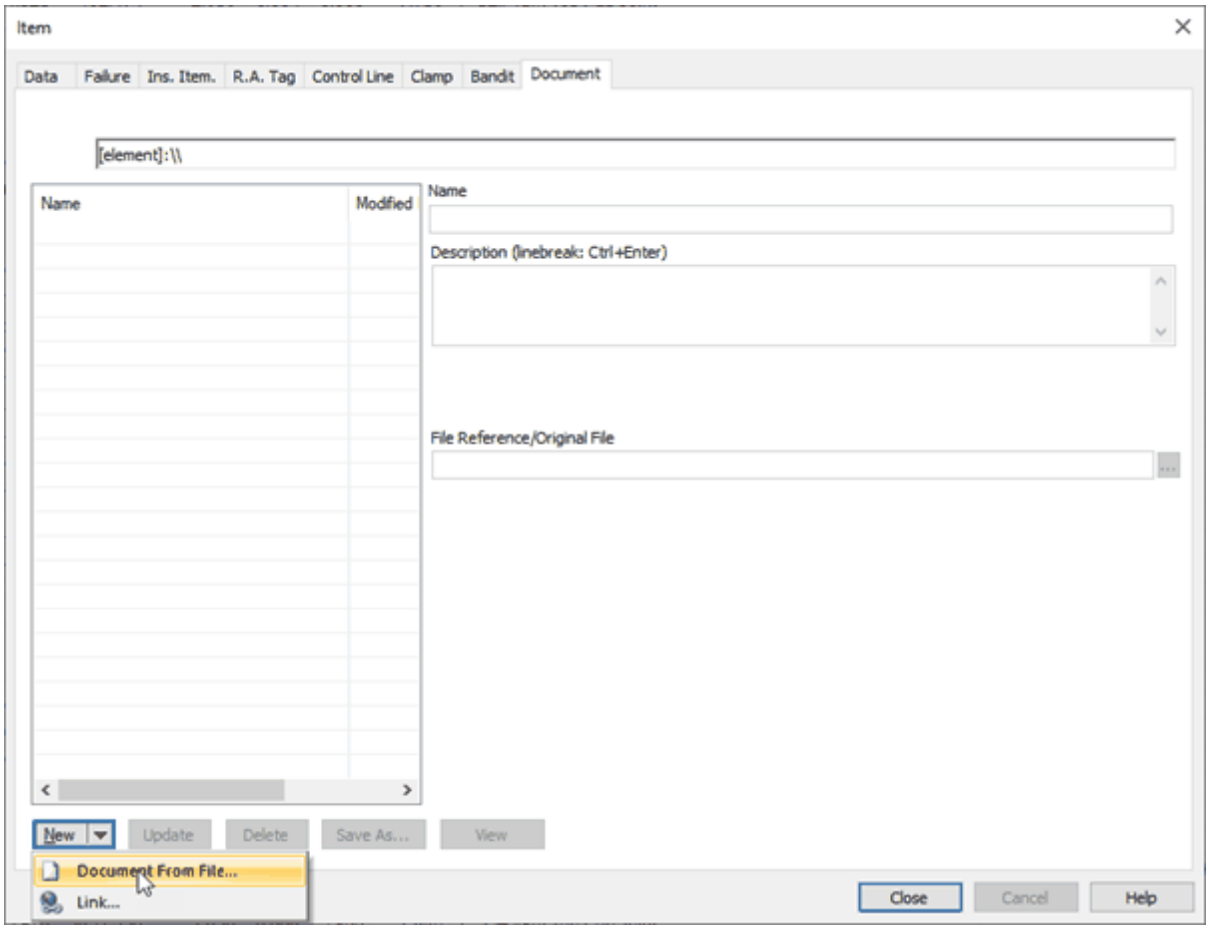
1.4.2.1.1.6 Bandit

You can enter number of bandits and comments in the Bandit tab:



1.4.2.1.1.7 Document

Enter topic text here.



Select "New" and browse to the document, or drag and drop the document into the document area. You can also add internet links into the document area, for dynamic documents.

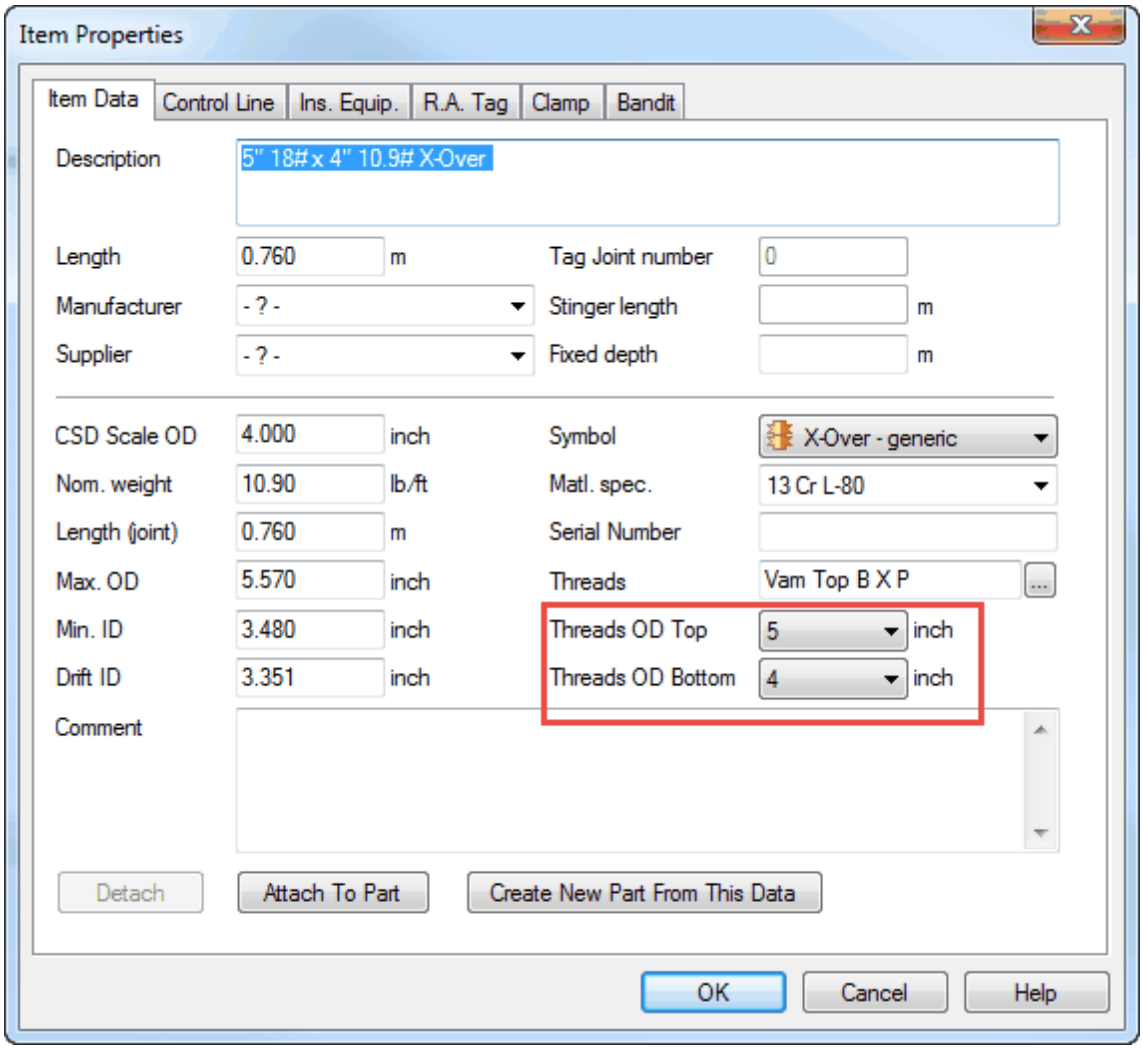
The item documents will be available to all users.

1.4.2.1.2 XO Scaling

X-over symbols in Schematic and Sketch:

XO Scaling:

The cross over symbols in CSD, are scaled according to the **registered Threads OD Top & Threads OD Bottom**. You should use a generic item (freetext symbol) for tubulars like XO, Pup Joint, Tubing and Flow Coupling.



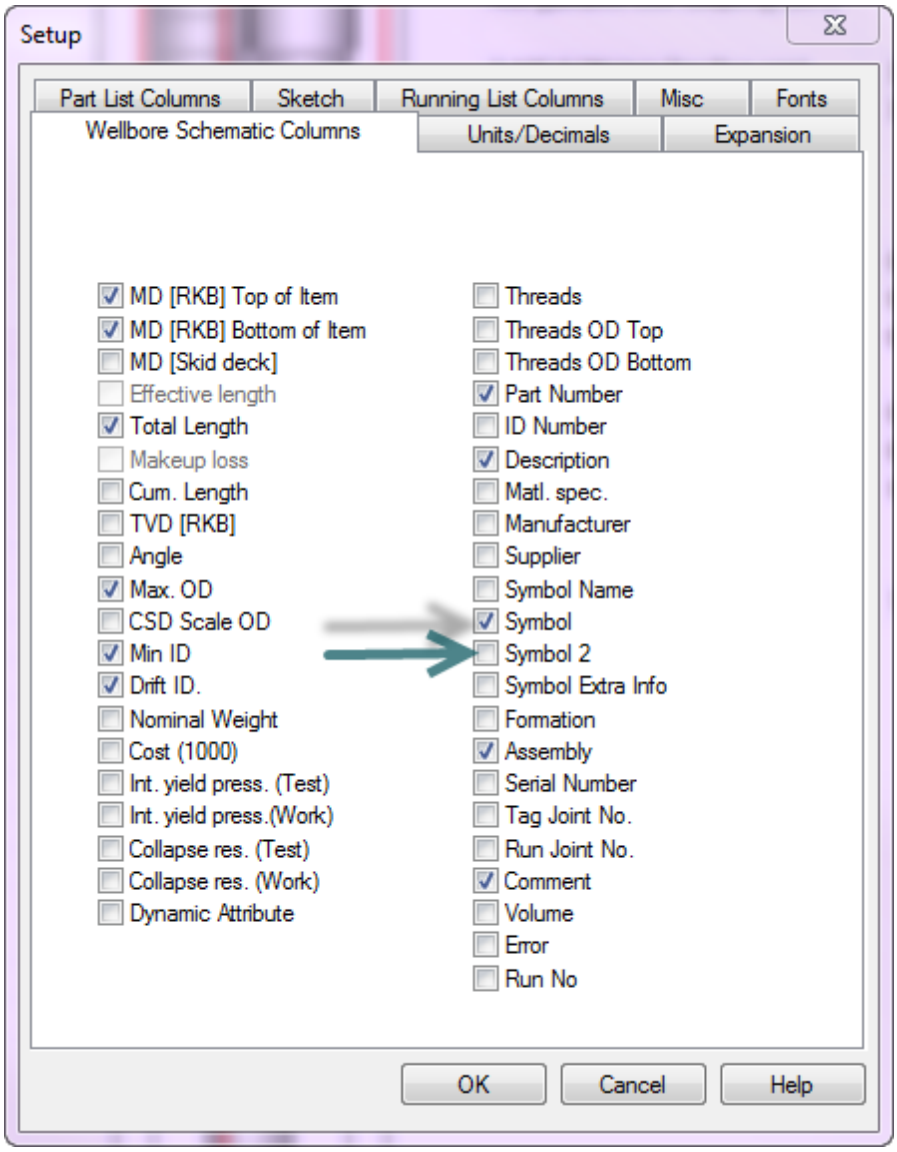
1.4.2.2 Secondary String Mode

You can use a secondary element layer to place a string inside a string in CSD. You should use the Secondary String Mode to register inner strings / DIACS (Down hole instrumentation and control system), straddles etc.

To enter the Secondary String Mode, choose Data, Secondary String Components, or push the  button.

Build your secondary string as usual by dragging the elements from the Toolbox. You will be asked to enter fixed depth when you insert the first element.

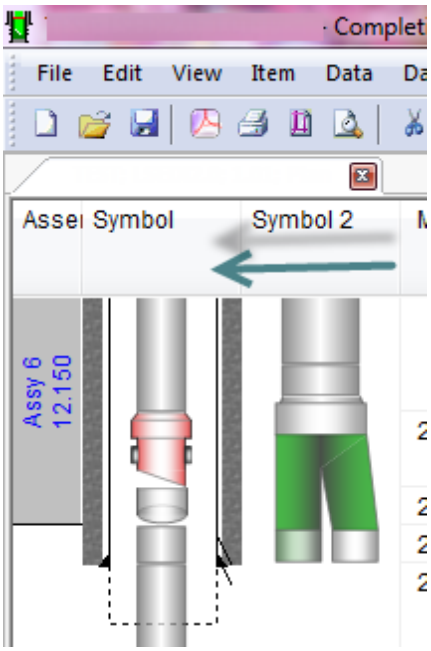
Choose Data, Secondary String Mode or push the button  to return to the Schematic mode, where the secondary string is now visible. The secondary string can be placed on top of, or beside the main string. This is controlled by turning on or off the Symbol 2 column in Options, Setup, and Wellbore Schematic Columns.



You can choose to view the Secondary String schematics in 3 different modes:

1. The two strings shows on top of each other. (Option, Setup: Symbol 2 column disabled).

NOTE: You can close the Symbol 2 column, by dragging one edge over the other. The two columns will then show on top of each other.



2. The two strings shows beside each other. (Option, Setup: Symbol 2 column enabled).

Tip! When you enable the Symbol 2 column in Option, Setup; the column appears as the last column to the right in the grid. You can drag and drop the Symbol 2 column to the left by grabbing the column heading.

3. Show only the secondary string. (Go to the Secondary String Mode).

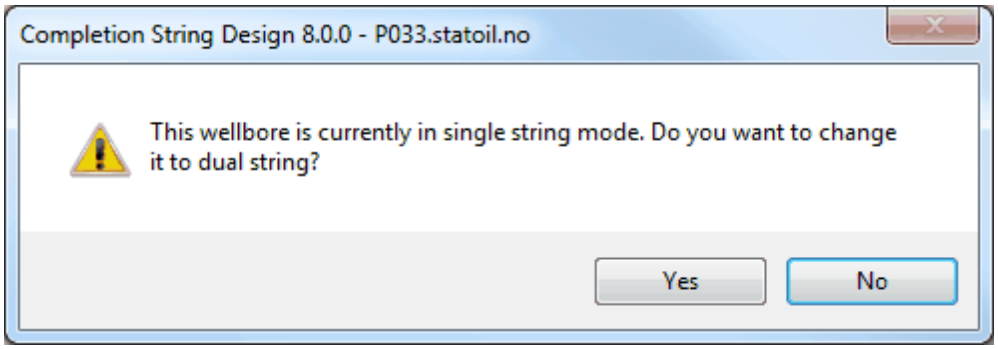
NOTE: If you make a secondary string deeper than the first string, the bottom elements of the secondary string will not be visible. You should then switch the strings around regarding the bottom assemblies. Also note that Print Layout will show and print out the current Schematic mode.

Tip! If you want to place only one element inside another, you should use the Inserted Equipment functionality.

1.4.2.3 Dual Strings

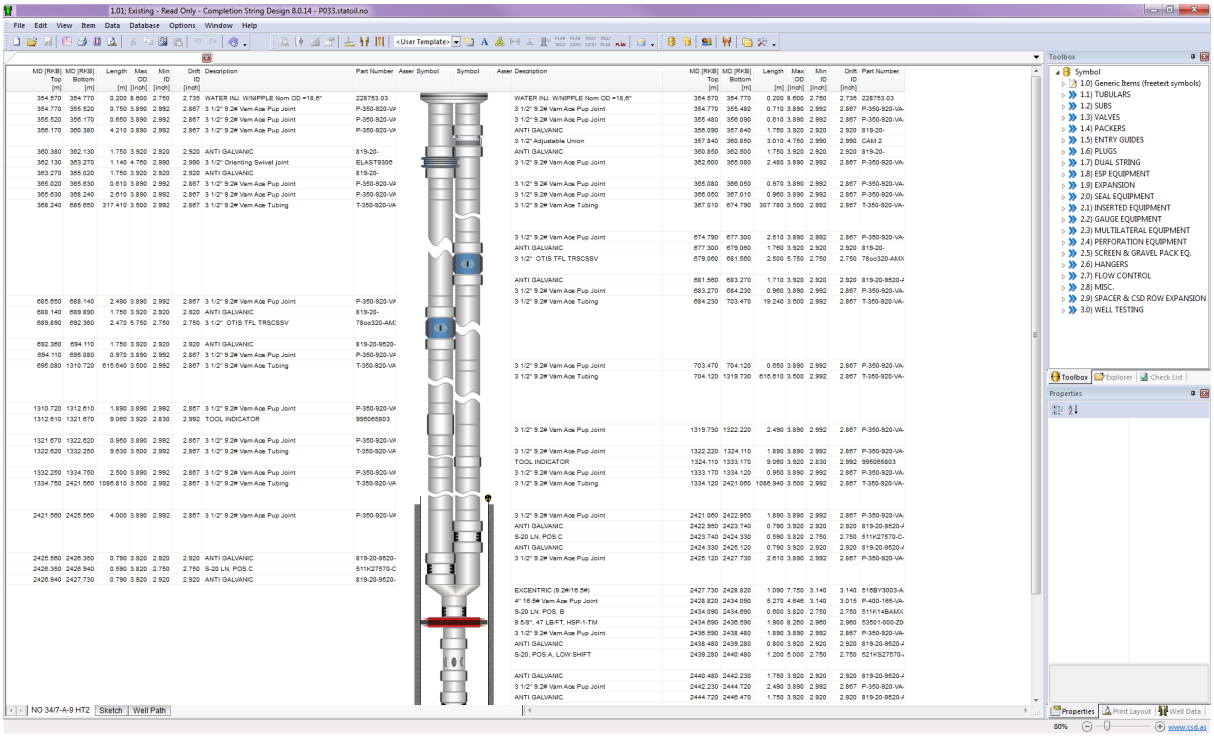
Building a dual string is done in the same way as building a single string.

When creating a dual string, you can start with single string and choose Data, Toggle Single/Dual (or F9). You can also change the string from dual to single using the same command.



When a dual string is selected, the symbol columns will always be located in the middle of the schematic window. When you insert a new symbol you must remember to choose on which side it is going to be inserted. Data which belongs to the left string is displayed at the left side and data which belongs to the right string is displayed at the right side.

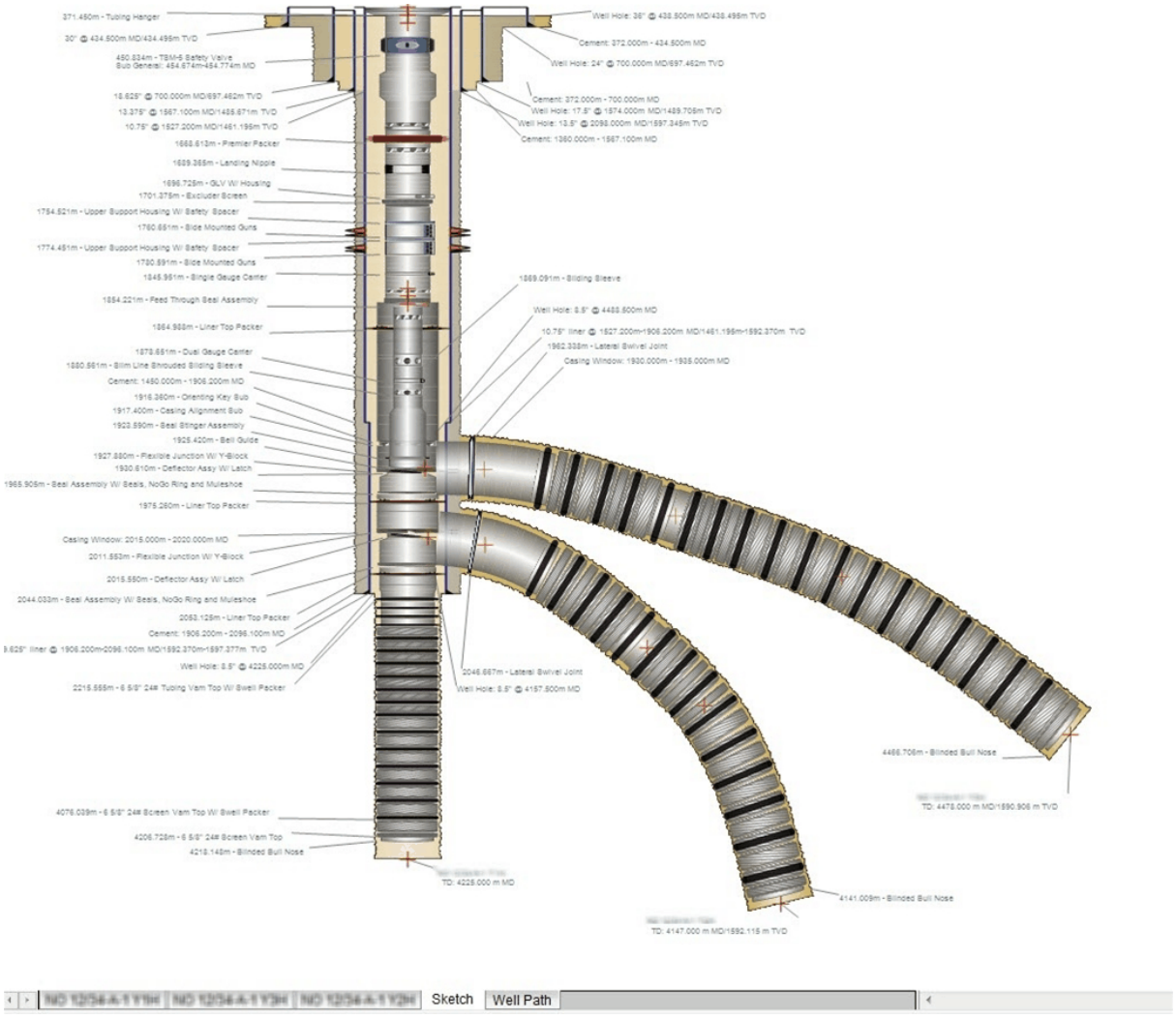
Example of a Dual String Well:

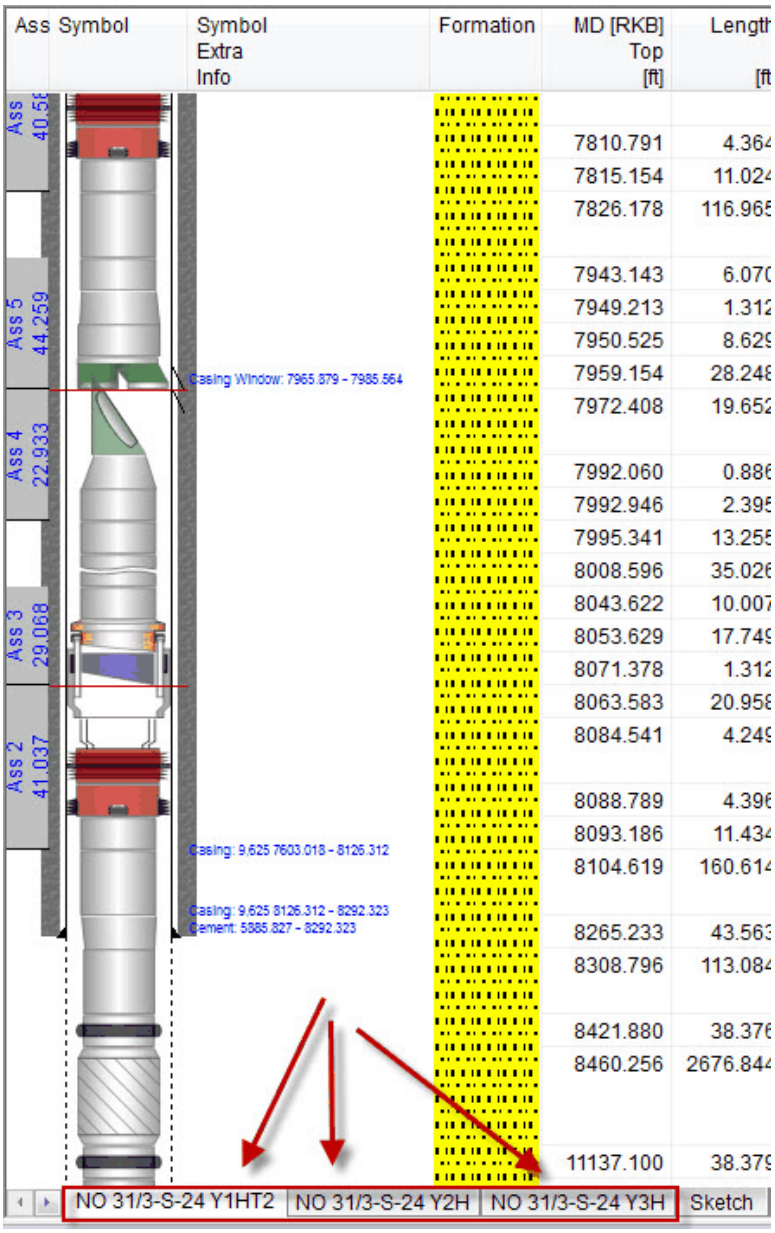


NOTE: Some of the symbols are designed to be used in wells where there are two strings. E.g. Y-block (two strings goes into one string), splitter (split the string into two strings), right from centre, centre from right, left from centre and centre from left. These symbols should be grouped in a DUAL STRING section in Toolbox.

1.4.2.4 Multilateral Wells

The main bore and lateral bore(s) are registered as different wellbores within the same well. You register each wellbore in a separate tab in the Schematic view.



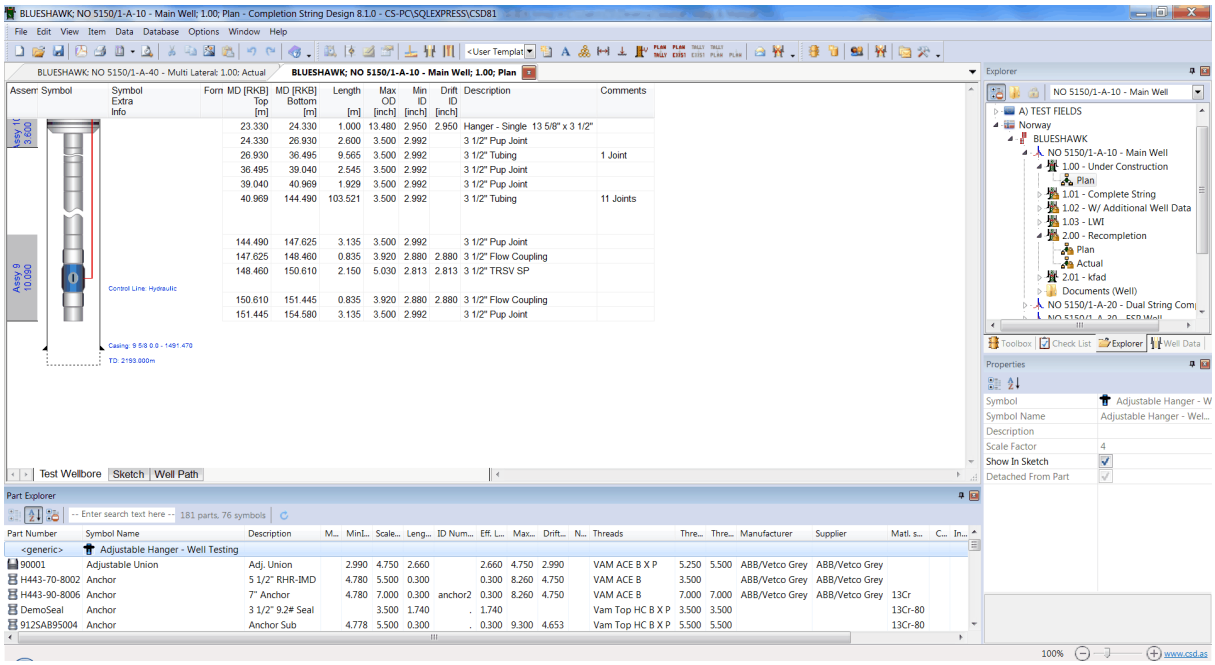


A lateral bore should start with the first element attached to the cross-section of the parent wellbore, or from the hanger section inside the parent wellbore.

NOTE: You don't insert an element in a lateral bore which is already inserted in the main bore.

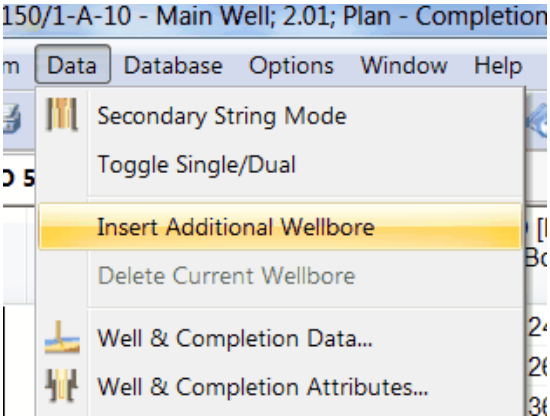
1.4.2.4.1 The Main Bore of a Multilateral Well

You start by building the main wellbore in the same manner as in non-multilateral wells. Follow the instructions for Single string.



1.4.2.4.2 The Lateral Bore of a Multilateral Well

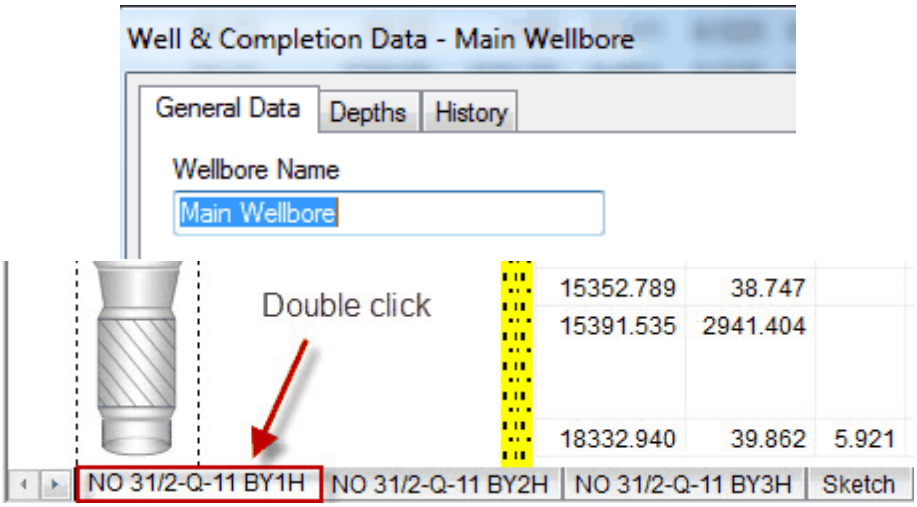
To create an additional wellbore; choose Data, Insert Additional Wellbore.



NOTE: To delete a lateral bore; contact the CSD System Administrator.

You can write the correct wellbore name in Data, Well & Completion Data, or double-click on a wellbore banner and change the name; then hit Enter. One input field will update the other.

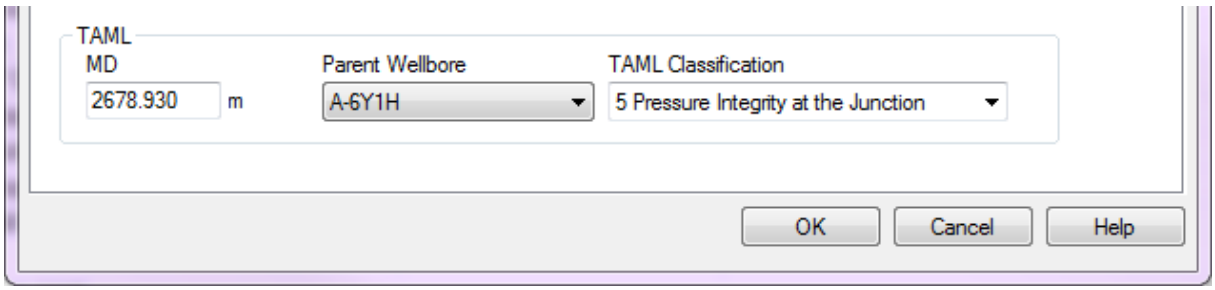
Remember to use the correct name-tags for the different wellbores!



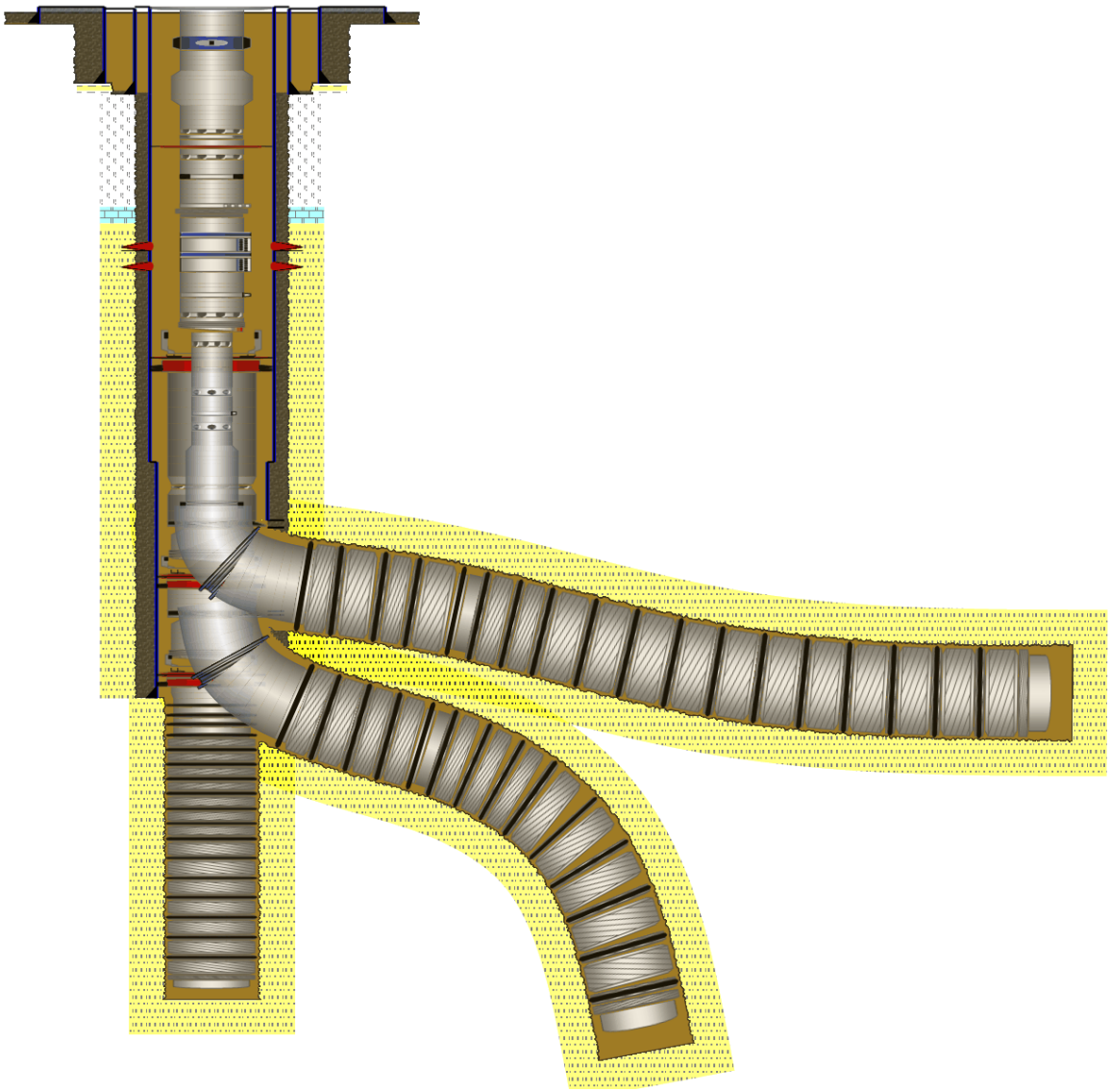
NOTE: You should not double register any elements across the different wellbores, such as **common casing strings**.

You connect the lateral wellbore to a parent wellbore in the Data, Completion Data, Depths dialog, by entering TAML MD and Parent Wellbore.

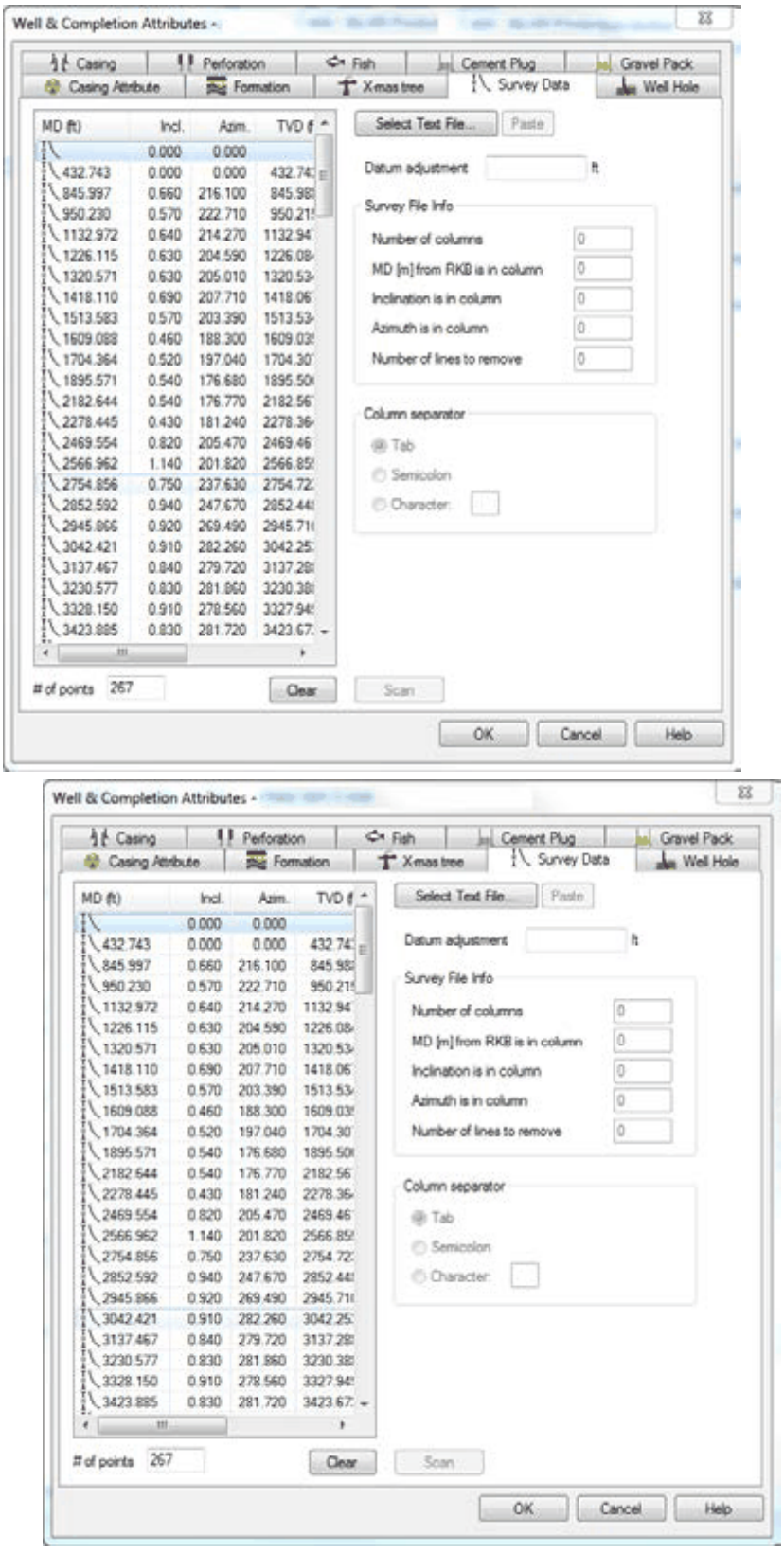
TAML MD: A CSD specific value, which indicates where the lateral wellbore connects to the parent for the wellbore. Top depth for the first element in the lateral wellbore.



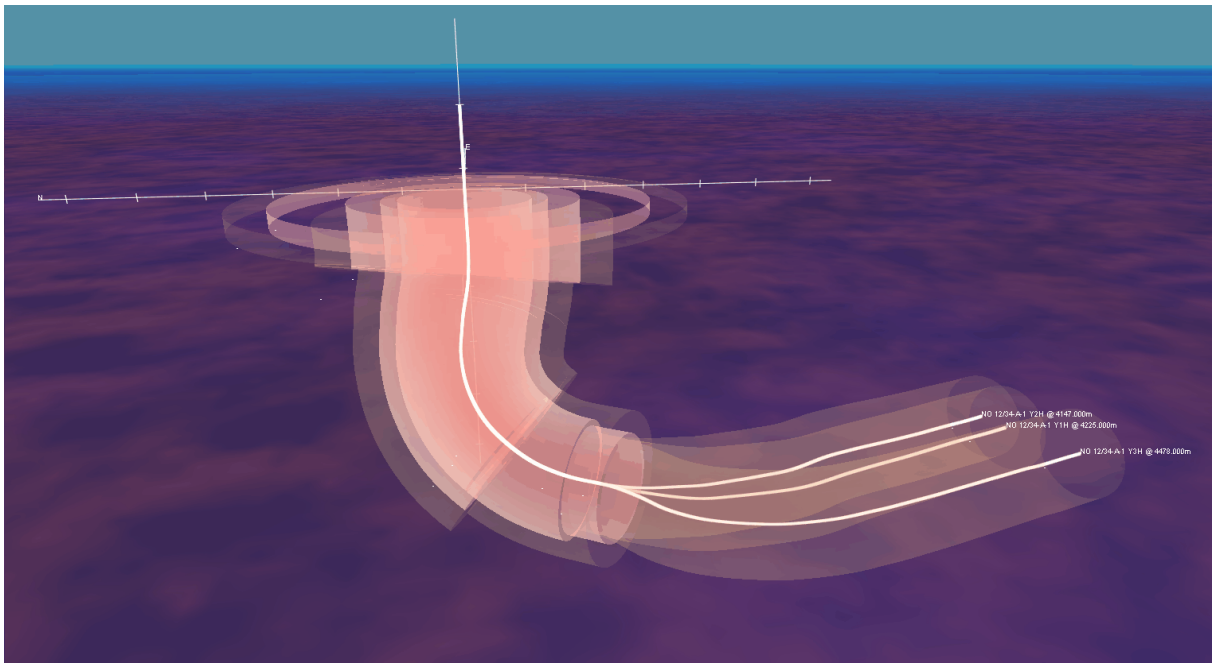
To connect the wellbores, use the control points to place the lateral bore(s) to the main bore at the correct connection point, then press Save.



Import Survey data for each wellbore separately.



The well trajectories will then show in the Well Path mode:



1.4.2.5 Assemblies

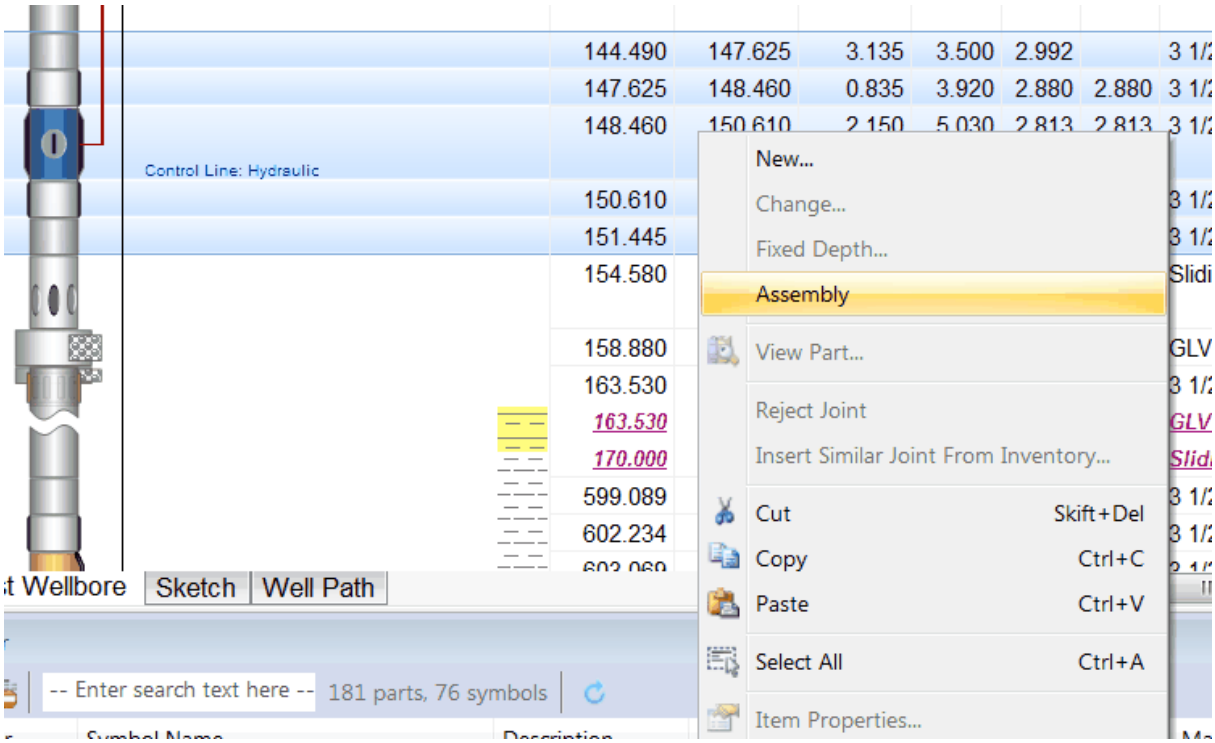
You can mark one or many elements in the Schematic grid to form an assembly.

How to mark one or many elements

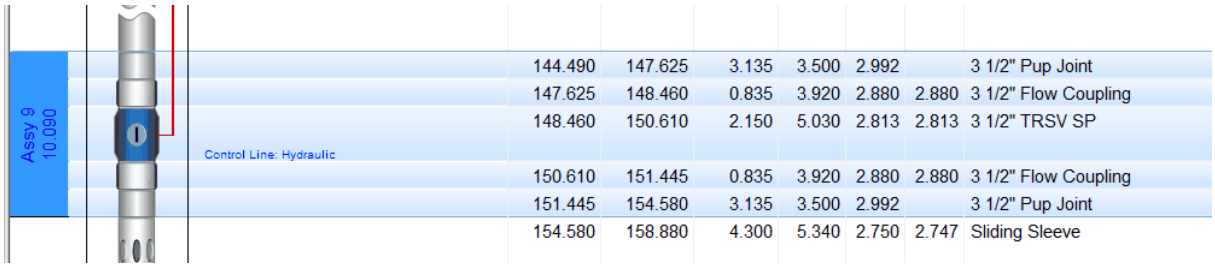
Hold down the left mouse button (**without releasing it)** at the first element in the selection, and roll the mouse downwards or upwards to make the selection.

Then right click on the selection and choose Assembly.

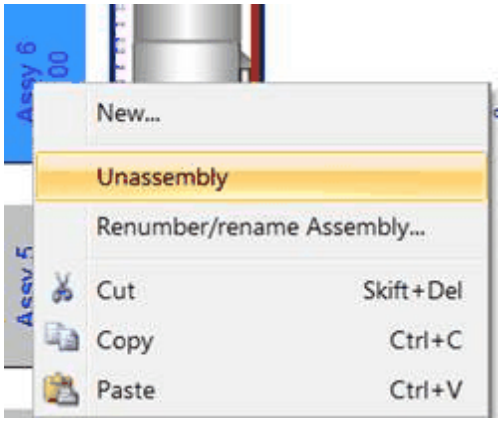
NOTE: If you select one item and then release the mouse button, you will move the selected item instead of making a selection!

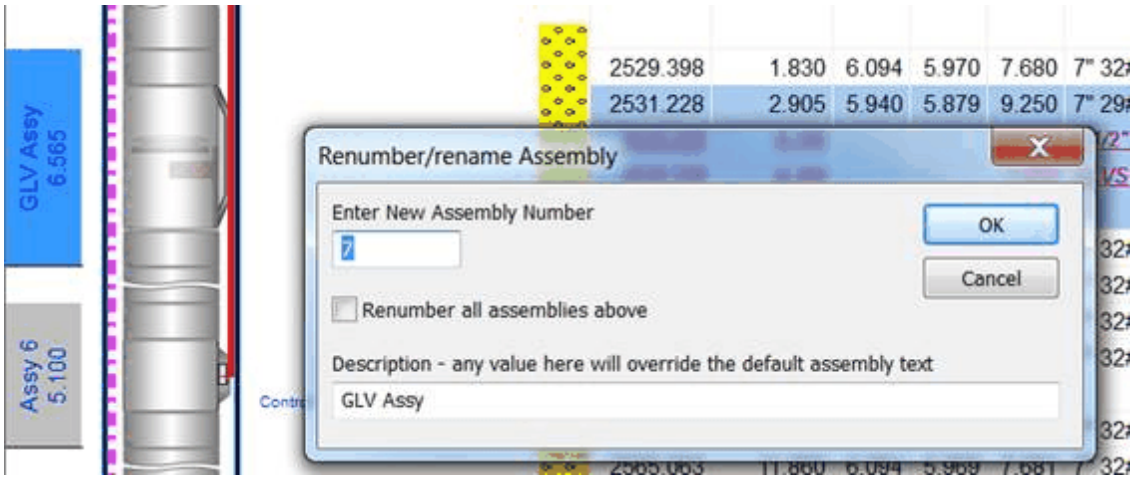


The selection will show as an assembly in the Assembly column, typically placed as the first column in the Schematic grid.



Select the assembly and right-click to renumber / rename or unassembly.

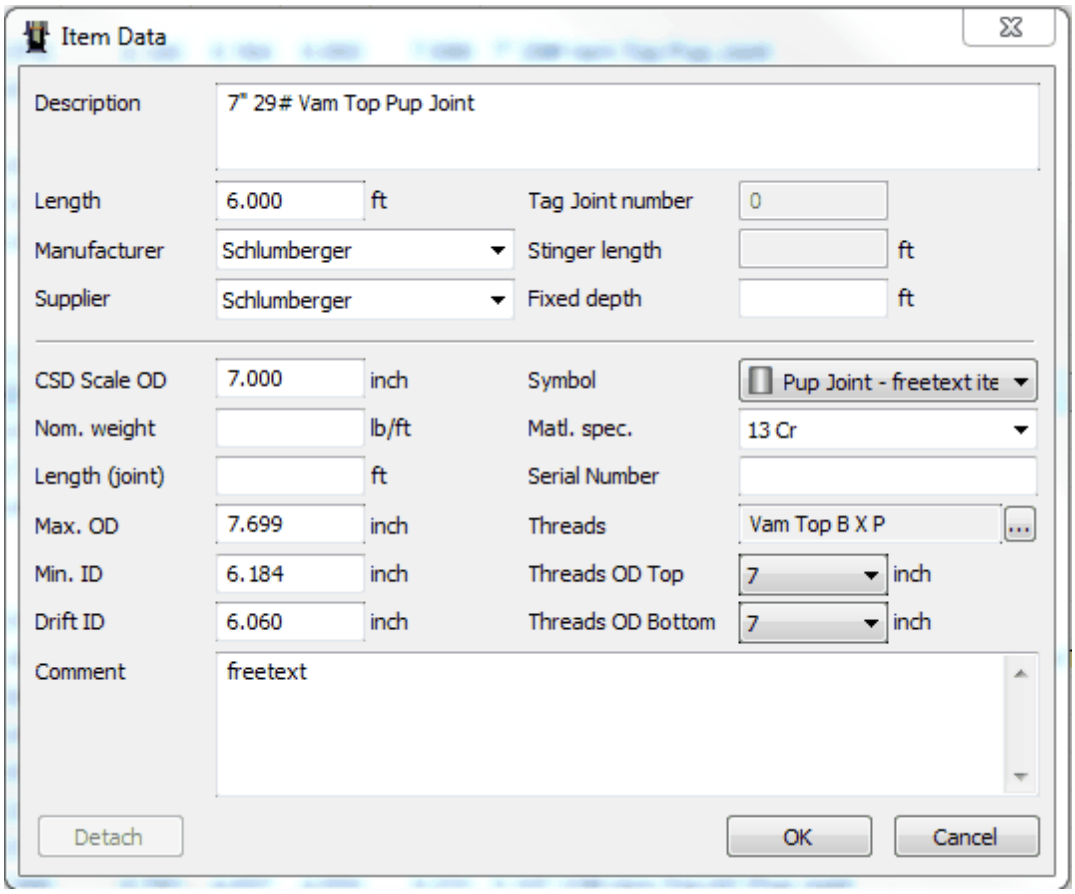




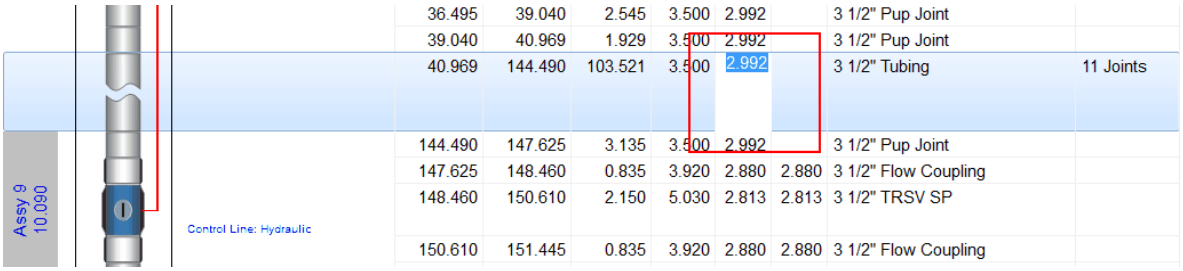
1.4.2.6 Generic Symbols

Using Generic Parts (freetext symbols)

Generic Parts are used typically when there is lesser information available about parts. Often that is parts where there's no information about Part Number. This includes parts such as Blank Pipes, Pup Joints, Tubing, X-overs, Flow Couplings etc. With Generic Symbols you have the freedom to choose all the specifics for the part (see figure below). For more important elements such as Packers, Valves, Hangers etc. you should have a part number and register as a part in the CSD equipment database.



As you can see in the figure there's a "Detach" function. This means that you can "unlock" a part and change some parameters if they don't correspond to the correct specifications. These parameters (typically IDs, OD and length) can also be changed directly in the Schematic window; just click in a cell, write a value and press Enter.



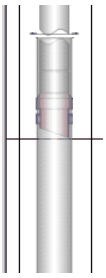
NOTE: The generic parts will not get a specific part number. This will leave the generic parts less traceable than the database parts, when it comes to where it's been used etc.

1.4.2.7 Scaling Stinger Completion

Scaling overlapping sections in Schematic

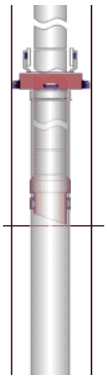
Because the symbols in the schematic are scaled relative to one another, there are certain

scenarios where some symbols might look a little squeezed. This is for instance the case when you have two sections with overlapping intervals where an assembly or a number of items in the lower section overlaps with a tubing section in the upper section. This will force CSD to draw all the symbols overlapping the tubing depth, within the same space as the tubing symbol. Below is an example where the lower section starts in the middle of a tubing section:



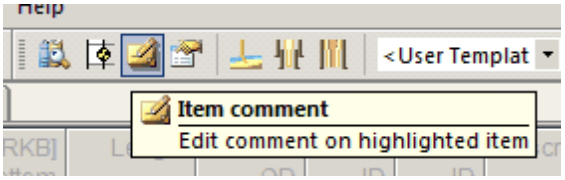
	521.120	701.120	180.000	6.150	4.778	4.653	5 1/2" 20# Vam Ace Tubing
Assy 2 4.930	701.120	704.580	3.460	5.880	4.890	4.770	5 1/2" 17# Vam Ace B x 5 1/2" 17# Vam FJL P, X-over
	704.580	706.050	1.470	5.880	4.800	4.767	SEAL STEM W/5.77 OD SEAL
Assy 1 13.550	600.000	606.860	6.860	8.290	7.520	7.500	7" PBR 20' x 9 5/8" L80 13Cr
	606.860	610.930	4.070	8.334	6.094	5.969	7" 32# FLEX-LOCK LINER HANGER W. ZXP Packer
	610.930	613.300	2.370	7.660	6.090	6.151	7" 32# Vam Top Pup Joint
	613.300	613.550	0.250	7.656	5.965	5.795	7" 32# VT x 6 5/8" 28#NSCC Crossover
	613.550	1213.550	600.000	7.390	5.921	5.796	6 5/8" 24# NSCC Blank Pipe

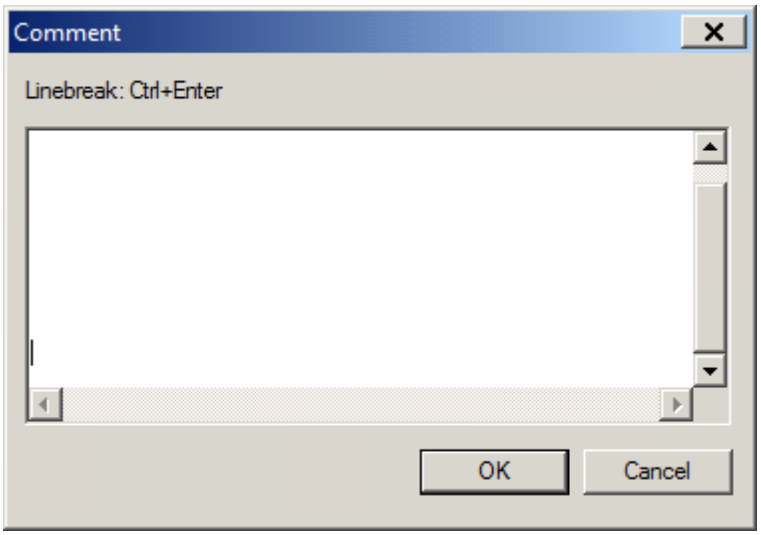
As you can see the PBR assembly is barely visible. But there are a few workarounds. For instance you can split up the tubing section so that you have a single joint in the same depth as the assembly. That will look something like this:



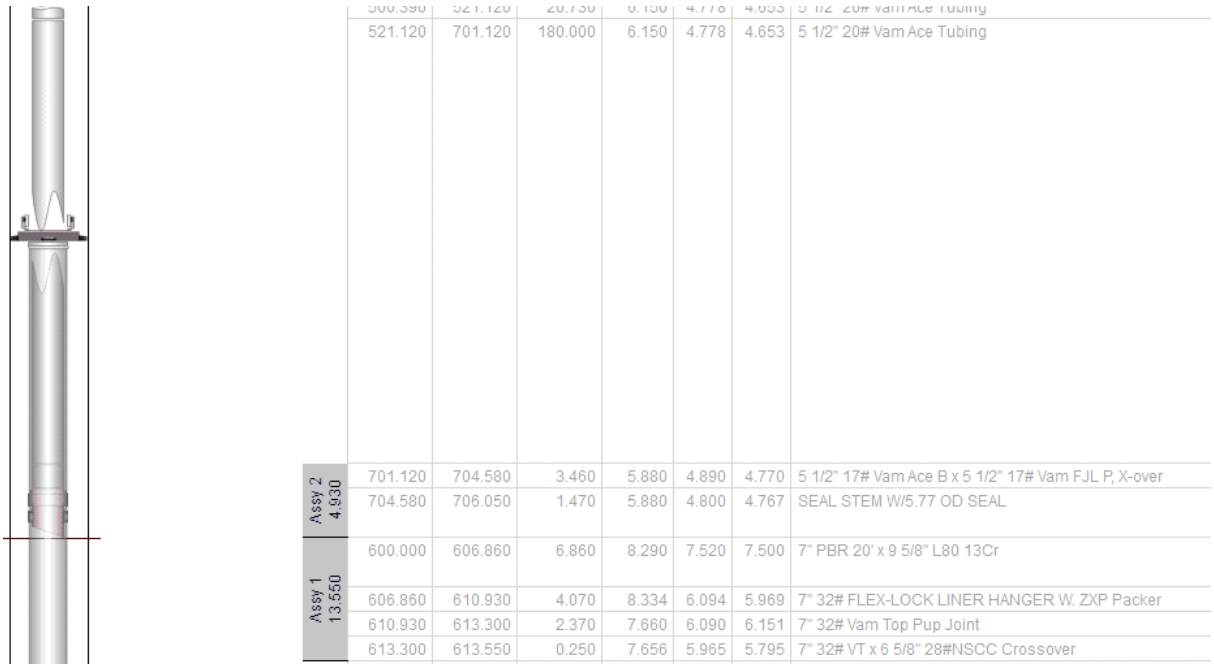
	521.120	601.120	80.000	6.150	4.778	4.653	5 1/2" 20# Vam Ace Tubing
	601.120	613.120	12.000	6.150	4.778	4.653	5 1/2" 20# Vam Ace Tubing
	613.120	701.120	88.000	6.150	4.778	4.653	5 1/2" 20# Vam Ace Tubing
Assy 2 4.930	701.120	704.580	3.460	5.880	4.890	4.770	5 1/2" 17# Vam Ace B x 5 1/2" 17# Vam FJL P, X-over
	704.580	706.050	1.470	5.880	4.800	4.767	SEAL STEM W/5.77 OD SEAL
Assy 1 13.550	600.000	606.860	6.860	8.290	7.520	7.500	7" PBR 20' x 9 5/8" L80 13Cr
	606.860	610.930	4.070	8.334	6.094	5.969	7" 32# FLEX-LOCK LINER HANGER W. ZXP Packer
	610.930	613.300	2.370	7.660	6.090	6.151	7" 32# Vam Top Pup Joint
	613.300	613.550	0.250	7.656	5.965	5.795	7" 32# VT x 6 5/8" 28#NSCC Crossover
	613.550	1213.550	600.000	7.390	5.921	5.796	6 5/8" 24# NSCC Blank Pipe

Alternatively you can expand the whole row by adding a number of lines in the comments field for the tubing. Highlight the row and click:





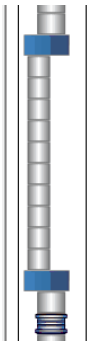
Here you enter new lines by pressing the Ctrl-button and Enter at the same time. Add as many as you need for the items to show up in the schematic:



1.4.2.8 ESP functionality

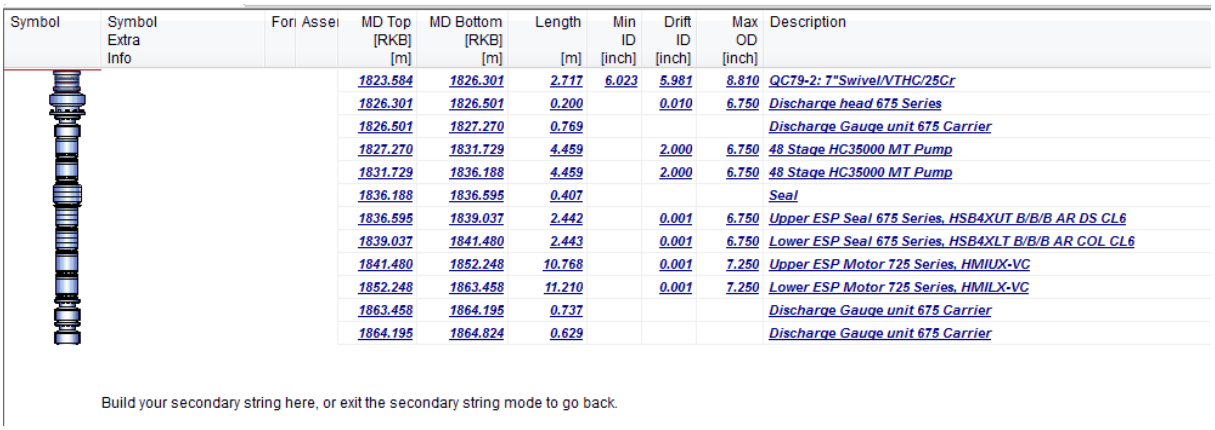
The best way of registering ESP equipment with bypass tubing in CSD, is to build the bypass tubing and the ESP section separately. The bypass tubing is then built in the Main String Mode and the ESP section in the Secondary String Mode:

Bypass tubing in Main String Mode:



1816.491	1819.294	2.803	4.778	4.653	5.530	Space out Tubing Joint 5 1/2" 20# Vam Top HC 13Cr80 Pup Joint
1819.294	1820.010	0.716	3.958	3.833	12.000	13 3/8" Support Block (Assy)
1820.010	1822.727	2.717	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1822.727	1823.696	0.969	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1823.696	1828.155	4.459	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1828.155	1832.614	4.459	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1832.614	1835.463	2.849	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1835.463	1837.906	2.443	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1837.906	1848.674	10.768	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1848.674	1859.884	11.210	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1859.884	1860.621	0.737	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1860.621	1861.250	0.629	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1861.250	1861.730	0.480	3.958	3.833	12.000	13 3/8" Support Block (Assy)
1861.730	1865.286	3.556	4.778	4.653	5.530	5 1/2" 20# Vam Top 13Cr80 Pup Joint
1865.286	1866.273	0.987	4.695	4.653	6.750	5 1/2" Rotational Alignment Sub

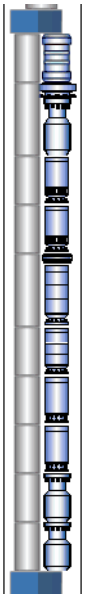
ESP equipment in Secondary String Mode:



Symbol	Symbol Extra Info	For	Asse	MD Top [RKB] [m]	MD Bottom [RKB] [m]	Length [m]	Min ID [inch]	Drift ID [inch]	Max OD [inch]	Description
				1823.584	1826.301	2.717	6.023	5.981	8.810	QC79-2: 7"Swivel/VTHC/25Cr
				1826.301	1826.501	0.200		0.010	6.750	Discharge head 675 Series
				1826.501	1827.270	0.769				Discharge Gauge unit 675 Carrier
				1827.270	1831.729	4.459		2.000	6.750	48 Stage HC35000 MT Pump
				1831.729	1836.188	4.459		2.000	6.750	48 Stage HC35000 MT Pump
				1836.188	1836.595	0.407				Seal
				1836.595	1839.037	2.442		0.001	6.750	Upper ESP Seal 675 Series, HSB4XUT B/B/B AR DS CL6
				1839.037	1841.480	2.443		0.001	6.750	Lower ESP Seal 675 Series, HSB4XLT B/B/B AR COL CL6
				1841.480	1852.248	10.768		0.001	7.250	Upper ESP Motor 725 Series, HMIUX-VC
				1852.248	1863.458	11.210		0.001	7.250	Lower ESP Motor 725 Series, HMILX-VC
				1863.458	1864.195	0.737				Discharge Gauge unit 675 Carrier
				1864.195	1864.824	0.629				Discharge Gauge unit 675 Carrier

Build your secondary string here, or exit the secondary string mode to go back.

Combined:



1822.868	1823.584	0.716	3.958	3.833	12.000	13 3/8" Support Block (Assy)
1823.584	1826.301	2.717	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1823.584	1826.301	2.717	6.023	5.981	8.810	QC79-2: 7"Swivel/VTHC/25Cr
1826.301	1827.270	0.969	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1826.301	1826.501	0.200		0.010	6.750	Discharge head 675 Series
1826.501	1827.270	0.769				Discharge Gauge unit 675 Carrier
1827.270	1831.729	4.459	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1827.270	1831.729	4.459		2.000	6.750	48 Stage HC35000 MT Pump
1831.729	1836.188	4.459	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1831.729	1836.188	4.459		2.000	6.750	48 Stage HC35000 MT Pump
1836.188	1839.037	2.849	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1836.188	1836.595	0.407				Seal
1836.595	1839.037	2.442		0.001	6.750	Upper ESP Seal 675 Series, HSB4XUT B/B/B AR DS CL6
1839.037	1841.480	2.443	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1839.037	1841.480	2.443		0.001	6.750	Lower ESP Seal 675 Series, HSB4XLT B/B/B AR COL CL6
1841.480	1852.248	10.768	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1841.480	1852.248	10.768		0.001	7.250	Upper ESP Motor 725 Series, HMIUX-VC
1852.248	1863.458	11.210	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1852.248	1863.458	11.210		0.001	7.250	Lower ESP Motor 725 Series, HMILX-VC
1863.458	1864.195	0.737	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1863.458	1864.195	0.737				Discharge Gauge unit 675 Carrier
1864.195	1864.824	0.629	3.260	4.653	5.540	4 1/2" 20# Vam Top HC Bypass tubing
1864.195	1864.824	0.629				Discharge Gauge unit 675 Carrier
1864.824	1865.304	0.480	3.958	3.833	12.000	13 3/8" Support Block (Assy)

By default, the two strings are presented on top of each other, but this can be adjusted. Highlight the parts you want to adjust, hold the **Shift-key** and press either the **left or right arrow-key** on your keypad. This will move the selected parts to the left or to the right.

So for this example it makes sense to move the bypass tubing to the left, and then enter Secondary String Mode and move the ESP equipment to the right.

Default presentation Main string mode (Schematic):

Shift + ← on the selected bypass tubing in Main string mode:

1800.805	1801.305	0.500	12.000	3.958	3.833	13 3/8" Support Block (Assy)	SUPPORTBLCK
1801.305	1811.985	10.680	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1805.500	1806.716	1.216	5.630	3.580		4 1/2" Bolt on Discharge	CCWT325198
1806.716	1815.976	9.260	5.620			Upper Pump 562 PLXSXD 052 P155	C322150
1811.985	1823.085	11.100	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1815.976	1825.056	9.080	5.620			Lower Pump 562 PMXSXD 052 P155	C322151
1823.085	1833.965	10.880	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1825.056	1826.310	1.254	5.630	3.500		4 1/2" Pump Discharge Pressure Sub	C309489
1826.310	1836.900	10.590	5.620			Upper Motor 562 Series/KMUX-VC 330/1430/145 22R	C322085
1833.965	1844.805	10.840	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1836.900	1847.800	10.900	5.620			Lower Motor 562 Series/KMLX-VC 330/1430/145	C322083
1844.805	1845.305	0.500	12.000	3.958	3.833	13 3/8" Support Block (Assy)	SUPPORTBLCK

Shift + → on the selected ESP Equipment in Secondary string mode:

Info	[m]	[m]	[m]	[inch]	[inch]	[inch]		
	1805.500	1806.716	1.216	5.630	3.580		4 1/2" Bolt on Discharge	CCWT325198
	1806.716	1815.976	9.260	5.620			Upper Pump 562 PLXSXD 052 P155	C322150
	1815.976	1825.056	9.080	5.620			Lower Pump 562 PMXSXD 052 P155	C322151
	1825.056	1826.310	1.254	5.630	3.500		4 1/2" Pump Discharge Pressure Sub	C309489
	1826.310	1836.900	10.590	5.620			Upper Motor 562 Series/KMUX-VC 330/1430/145 22R	C322085
	1836.900	1847.800	10.900	5.620			Lower Motor 562 Series/KMLX-VC 330/1430/145	C322083
	1847.800	1849.000	1.200	4.500			4 1/2" Wellift MGU ESP Sensor	PWLH9002_1

Symbol	Symbol Extra Info	For	Asse	MD Top [RKB] [m]	MD Bottom [RKB] [m]	Length [m]	Max OD [inch]	Min ID [inch]	Drift ID [inch]	Description	Part Number
				1805.500	1806.716	1.216	5.630	3.580		4 1/2" Bolt on Discharge	CCWT325198
				1806.716	1815.976	9.260	5.620			Upper Pump 562 PLXSXD 052 P155	C322150
				1815.976	1825.056	9.080	5.620			Lower Pump 562 PMXSXD 052 P155	C322151
				1825.056	1826.310	1.254	5.630	3.500		4 1/2" Pump Discharge Pressure Sub	C309489
				1826.310	1836.900	10.590	5.620			Upper Motor 562 Series/KMUX-VC 330/1430/145 22R	C322085
				1836.900	1847.800	10.900	5.620			Lower Motor 562 Series/KMLX-VC 330/1430/145	C322083
				1847.800	1849.000	1.200	4.500			4 1/2" Wellift MGU ESP Sensor	PWLH9002_1

Result:

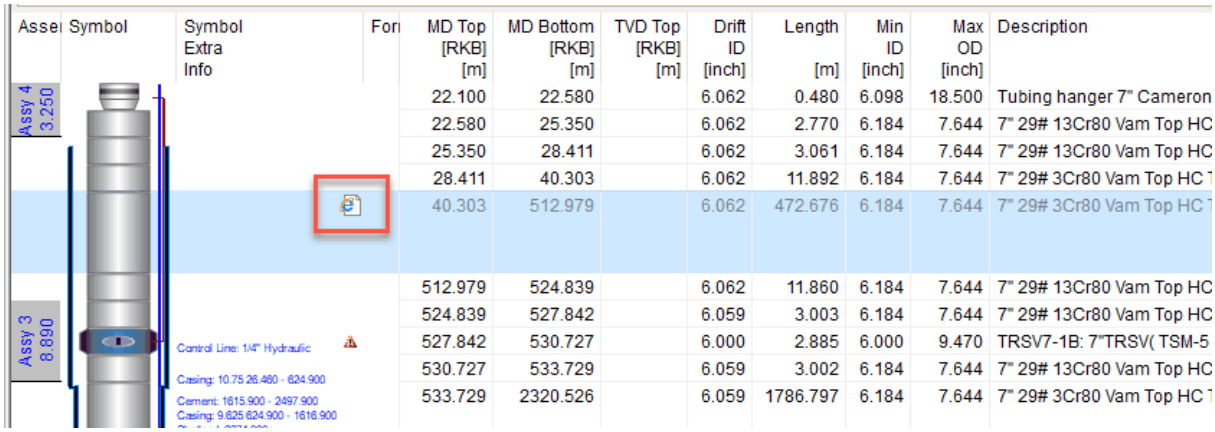
1800.805	1801.305	0.500	12.000	3.958	3.833	13 3/8" Support Block (Assy)	SUPPORTBLCK
1801.305	1811.985	10.680	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1805.500	1806.716	1.216	5.630	3.580		4 1/2" Bolt on Discharge	CCWT325198
1806.716	1815.976	9.260	5.620			Upper Pump 562 PLXSXD 052 P155	C322150
1811.985	1823.085	11.100	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1815.976	1825.056	9.080	5.620			Lower Pump 562 PMXSXD 052 P155	C322151
1823.085	1833.965	10.880	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1825.056	1826.310	1.254	5.630	3.500		4 1/2" Pump Discharge Pressure Sub	C309489
1826.310	1836.900	10.590	5.620			Upper Motor 562 Series/KMUX-VC 330/1430/145 22R	C322085
1833.965	1844.805	10.840	6.211	4.670	4.545	5 1/2" 23# Bypass Tubing Vam Top HC B X P	
1836.900	1847.800	10.900	5.620			Lower Motor 562 Series/KMLX-VC 330/1430/145	C322083
1844.805	1845.305	0.500	12.000	3.958	3.833	13 3/8" Support Block (Assy)	SUPPORTBLCK

1.4.2.9 CSD Document Softlink

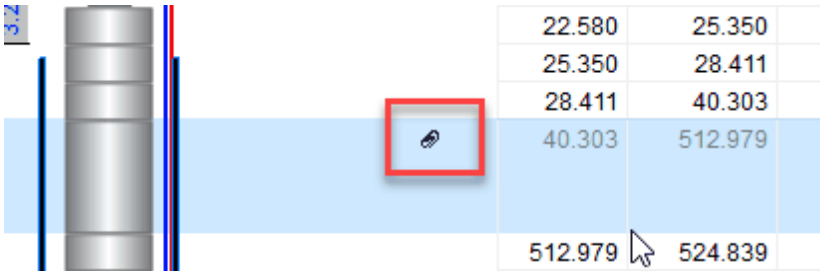
CSD Softlink.

It's possible to attach one or several documents to a specific completion element in the well schematic. This is easily done by right-click an element and attach the document.

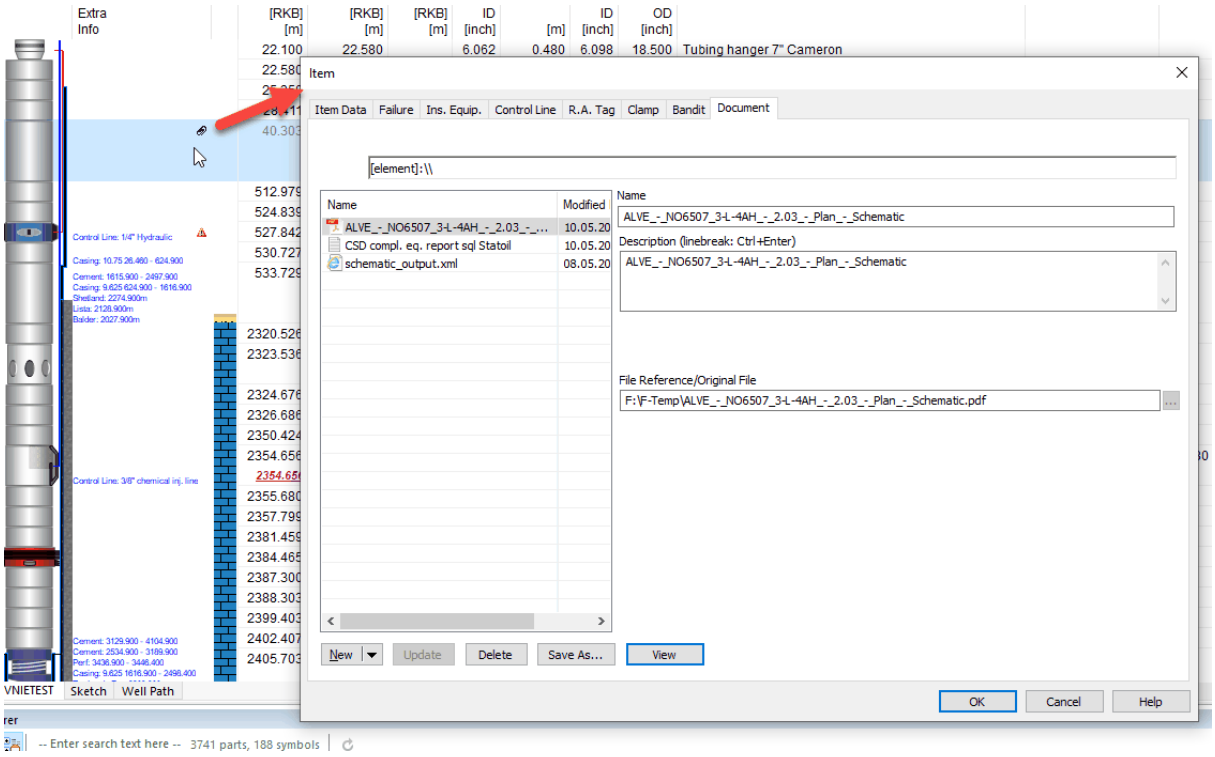
The Item-document shows as an icon in the Symbol Extra Info column:



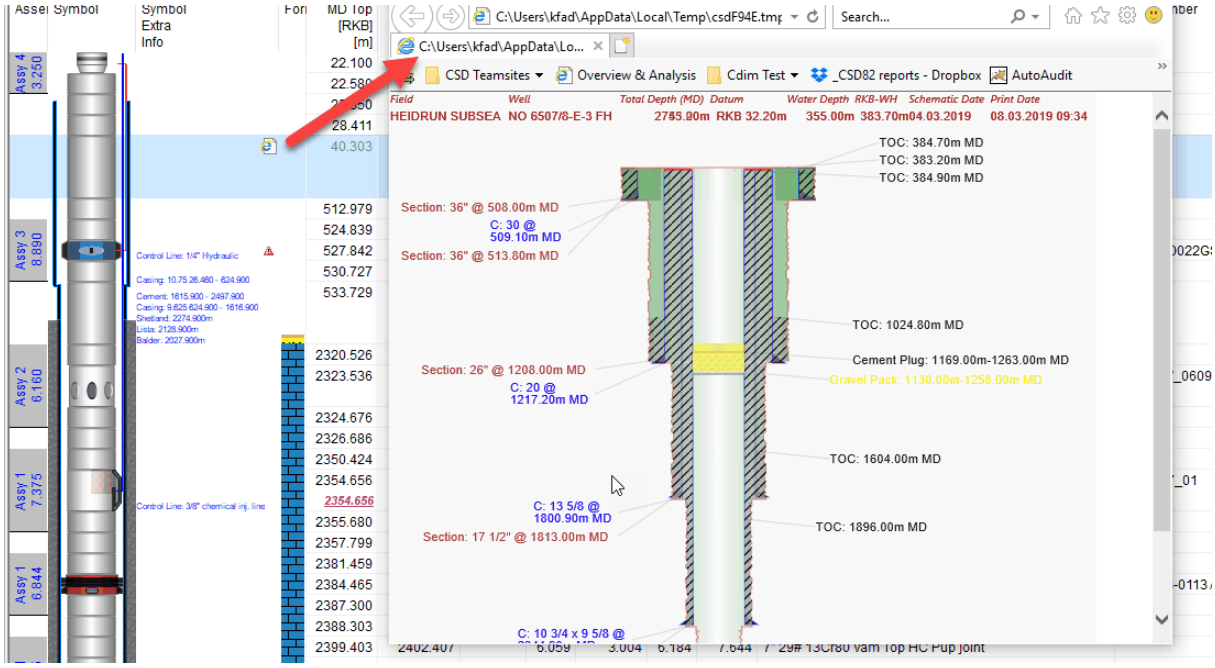
A paper clip icon shows in case of multiple documents:



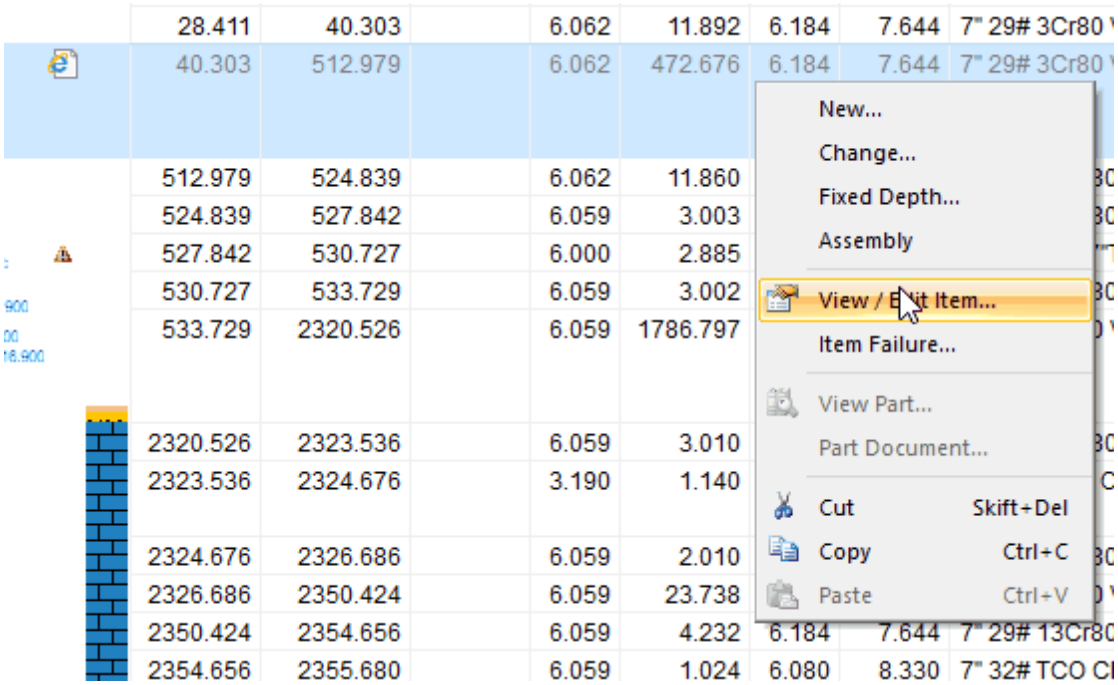
Click on the icon to open the Document tab:



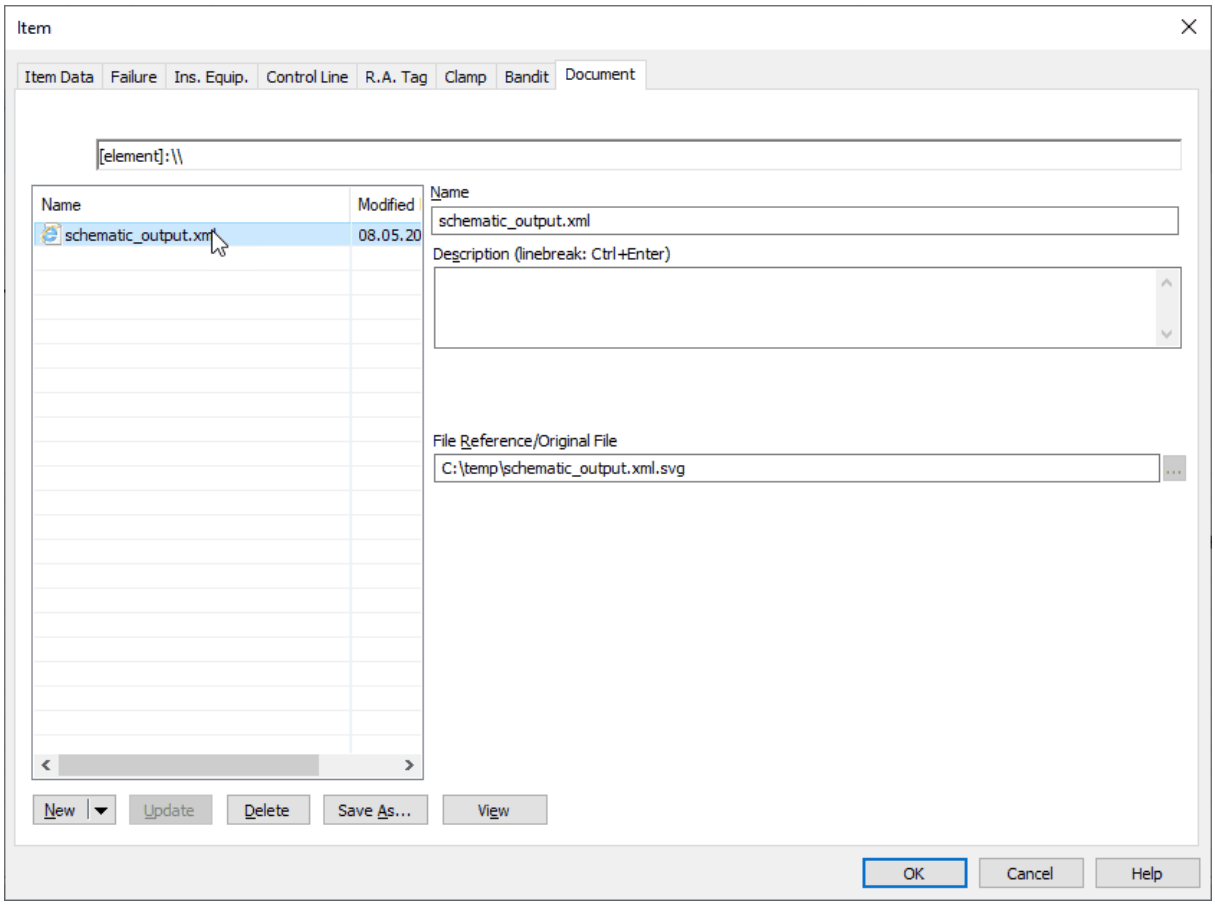
Click on the document icon, and the document opens:



You add a document by right-click an item and choose View / Edit Item...:



This opens the Document tab, for adding or editing documents belonging to an item:



1.4.3 Third Step: Save

To keep track of the history of each well, it is important to save changes to a new revision number. The well history will be kept in the CSD database.
Use **Save As (in database)...** when you save the completion for the first time. Choose New Completion, and choose the well you want to save it to. The initial completion has revision number 1.00. Note that the well must be predefined. From now on you can use the Save option in the File Menu or the button when you want to save your changes.

The revision numbering is split into two categories:

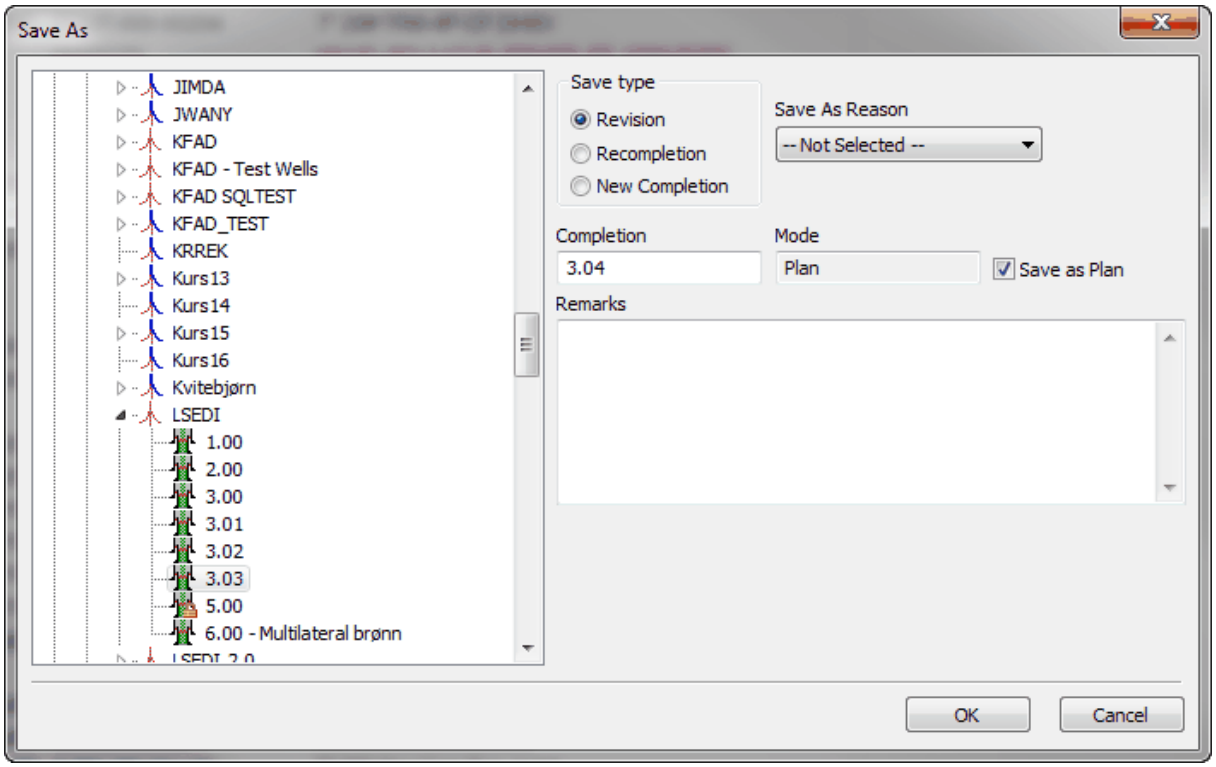
1. Major workovers: Replacement of the complete tubing. Revision number will increase by a whole number. The first major overhaul will receive version 2.0.

2. Minor workovers: Setting of plugs, re-perforation etc. The revision number will increase with 0.01. The first minor workover overhaul will get the revision number 1.01.

Each company defines for itself what is considered a minor or a major workover.
You should always make remark about which update you have done in the new version. This will be helpful when other people need to open the schematic.

Save as new revision:

Open the last revision number of the well that you want to change. This is done by choosing File, Open or by pressing . Choose Save As in the File menu. The Save As dialog box appears.



Choose if you want to save the completion as:

- Revision (the revision number will automatically be increased by 0.01).
- Recompletion (the revision number is rounded up to the closest integer according to the open completion).
- New Completion. This is used when saving initially. Choose which well to save to from the window on the left.

For option Revision or Recompletion, select Save As Reason for creating new revision. This will provide a history track for the wells.

Push OK. The completion is saved with a new revision number. Alter your data and use the Save button from now on.

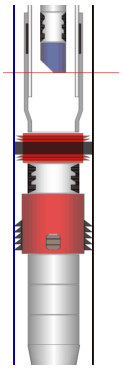
NOTE: There is no auto save functionality in CSD, due to the fact that the user should be able to play around with an existing well Schematic or Sketch, making preliminary / simplified presentations etc., without wanting to save it as an official completion drawing.

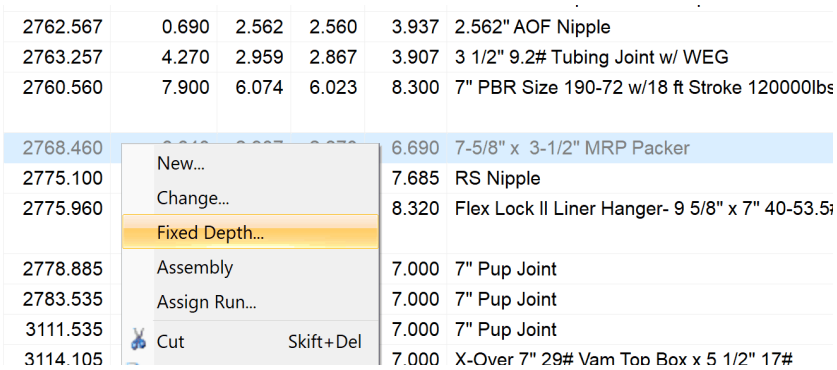
Tip! We recommend that you save periodically to prevent loss of data due to unexpected errors with your PC, database network etc.

1.5 Pull Completion

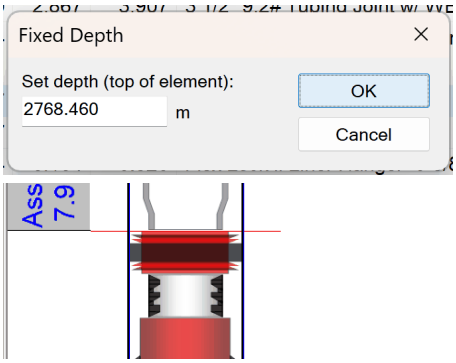
1.5.1 How to pull completion above packer

Right click on the packer of the first/top item that is going to be left in the well, and choose **Fixed Depth...:**



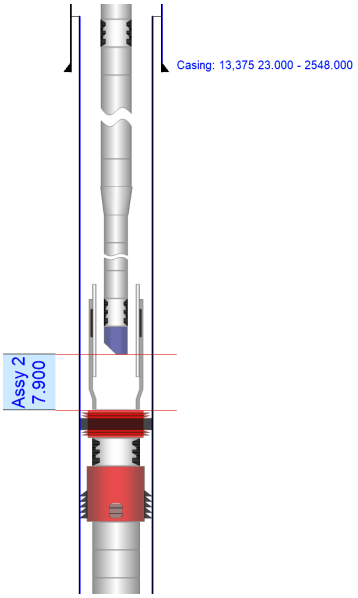


Enter the MD Top for this element and click **OK**. You will then see a red line on top of the item, indicating that it has a fixed depth:



2768.460
2775.100
2775.960

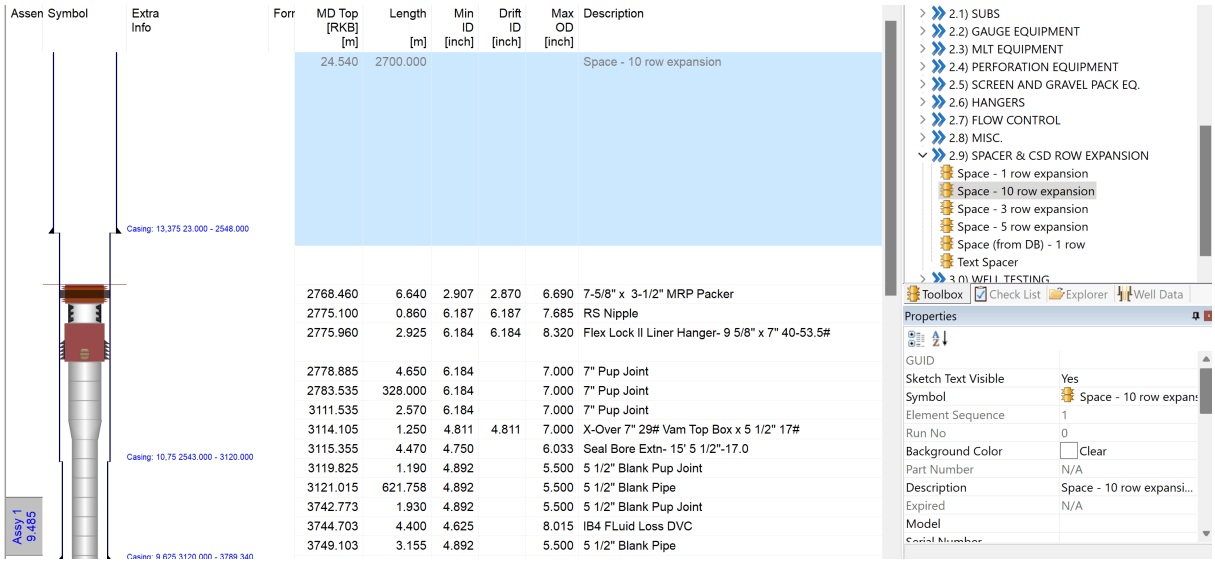
Highlight all the items above the packer, by clicking at the top item/Tubing Hanger and drag the mouse cursor down to the packer while holding in the left mouse button. Then press Delete on your keyboard:



2543.147	1.390	3.750	3.750	6.125	Punch Com.Nipple, 3.75 AF
2544.537	4.000	3.876	3.833	4.906	4 1/2" 12.6# Pup Joint VTHC B x P
2548.537	186.290	3.876	3.833	4.906	4 1/2" 12.6# Tubing VTHC B x P
2734.827	4.010	3.876	3.833	4.906	4 1/2" 12.6# Pup Joint VTHC B x P
2738.837	4.020	2.992	2.867	4.906	4 1/2" 12.6# Pup Joint VTHC B x P
2742.857	4.020	2.992	2.867	3.907	3 1/2" 9.2# Pup Joint Vam Top B x P
2746.877	11.780	2.959	2.867	3.907	3 1/2" 9.2# Tubing Vam Top B x P
2758.657	3.910	2.992	2.867	3.907	3 1/2" 9.2# Pup Joint Vam Top B x P
2762.567	0.690	2.562	2.560	3.937	2.562" AOF Nipple
2763.257	4.270	2.959	2.867	3.907	3 1/2" 9.2# Tubing Joint w/ WEG
2760.560	7.900	6.074	6.023	8.300	7" PBR Size 190-72 w/18 ft Stroke 120000lbs sh
2768.460	6.640	2.907	2.870	6.690	7-5/8" x 3-1/2" MRP Packer
2775.100	0.860	6.187	6.187	7.685	RS Nipple
2775.960	2.925	6.184	6.184	8.320	Flex Lock II Liner Hanger- 9 5/8" x 7" 40-53.5#
2778.885	4.650	6.184		7.000	7" Pup Joint
2783.535	328.000	6.184		7.000	7" Pup Joint

Now go to **Toolbox** and find the **SPACER & CSD ROW EXPANSION** section. Choose **Space – 10 row expansion.**
(This configuration can vary for the different companies. If you don't see the Spacer section, contact Help & Support).

Drag it above the packer and set the length to i.e. 50m shorter than the Packers MD Top (the MD Bottom of the Spacer must not be lower than the MD top of the Packer). In the following example the length of the spacer is set to 2700m.
This is for viewing purposes only:



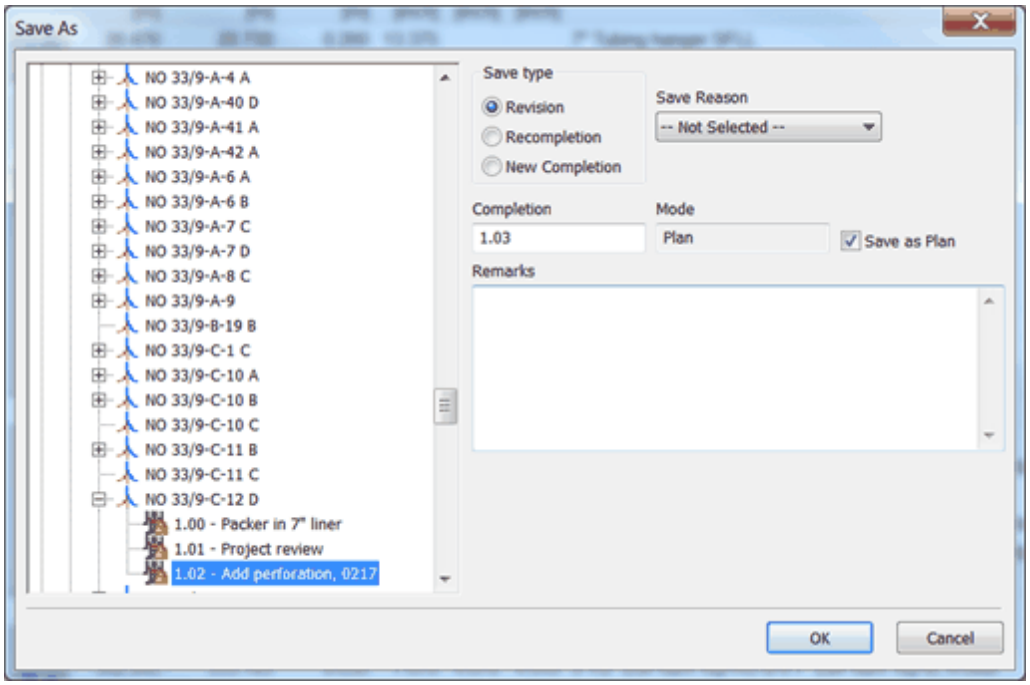
1.6 Documentation of Well Intervention Activities

1.6.1 Save Latest Existing revision As New revision

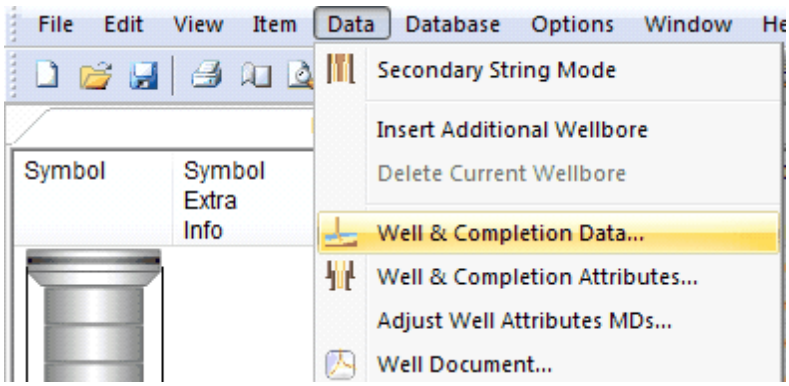
Open your well (Open the latest revision that has an Existing mode of the well).
Once the well is open, Go to **File** and **Save As (in database)…**

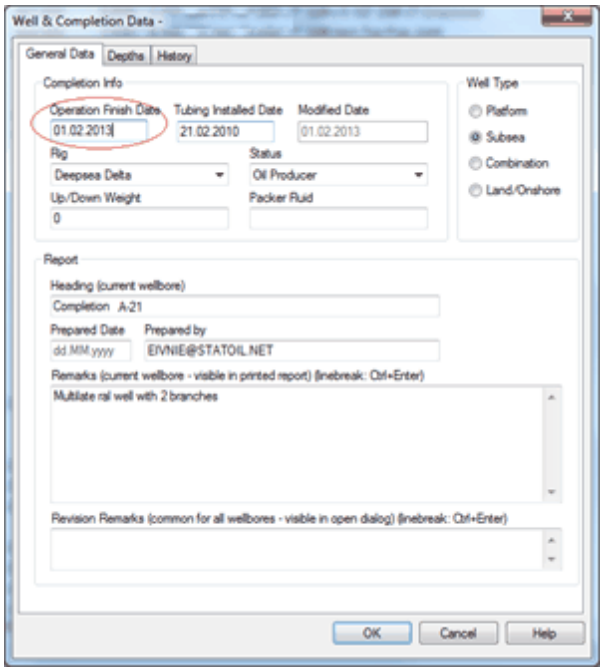
Uncheck the **Save as Plan**-box to save it directly to Existing mode.

Choose a Save Type (and failed items Yes/No).
Under **Remarks** please write shortly what has been done i.e. “Replaced dummy with GLV in upper SPM”. Then press **OK**.



Update the **Operation Finish Date** by clicking **Data** – **Well & Completion Data** and enter the new Operation finish date:



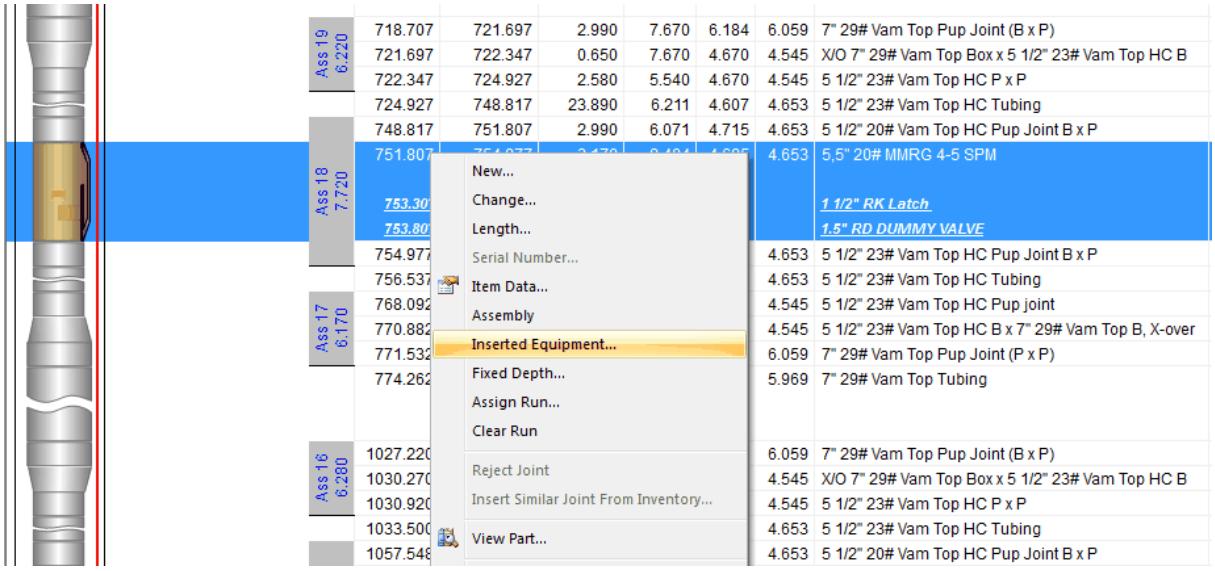


1.6.2 How to add perforations

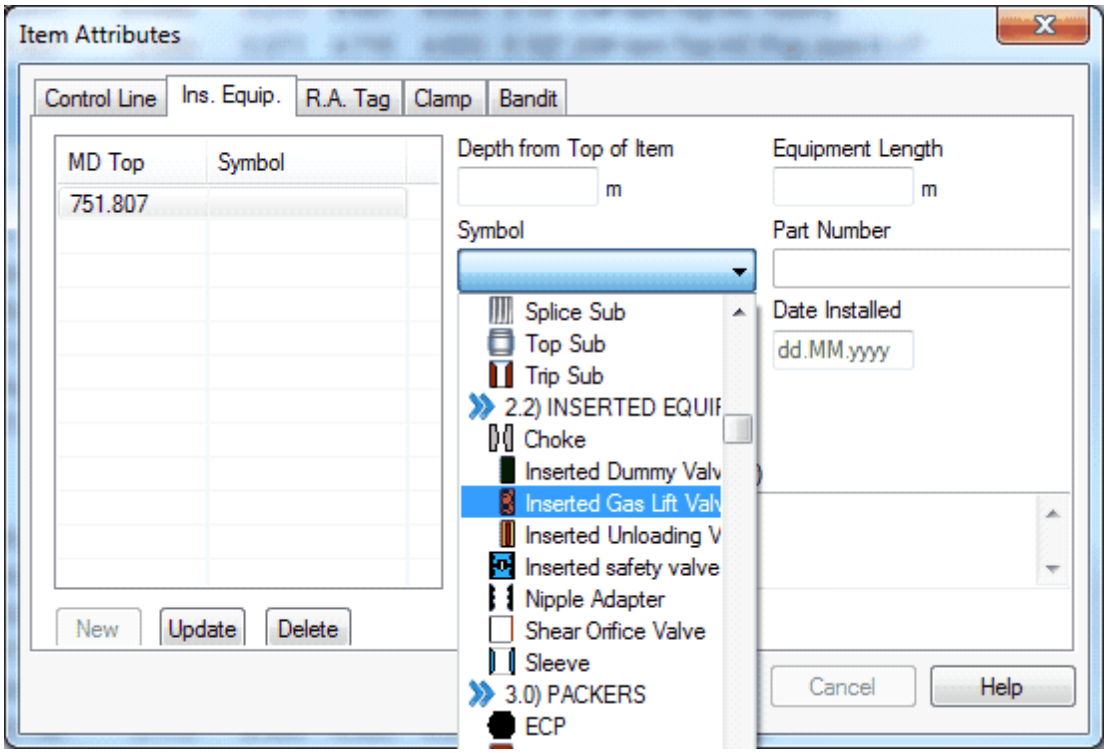
Please go to the perforation chapter.

1.6.3 How To Change Dummy Valve With GLV In SPM

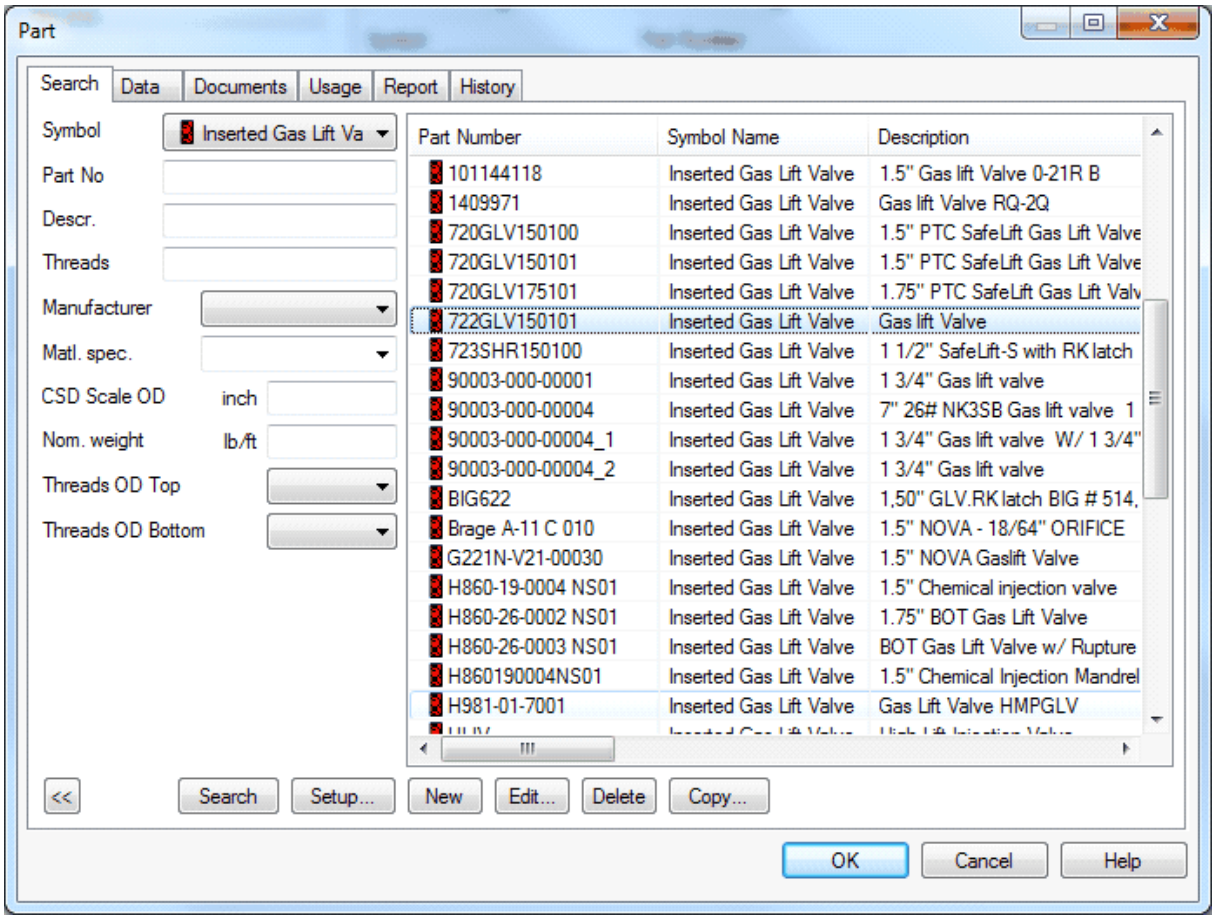
Click on the SPM to highlight it, and then right click it and choose **Inserted equipment**:



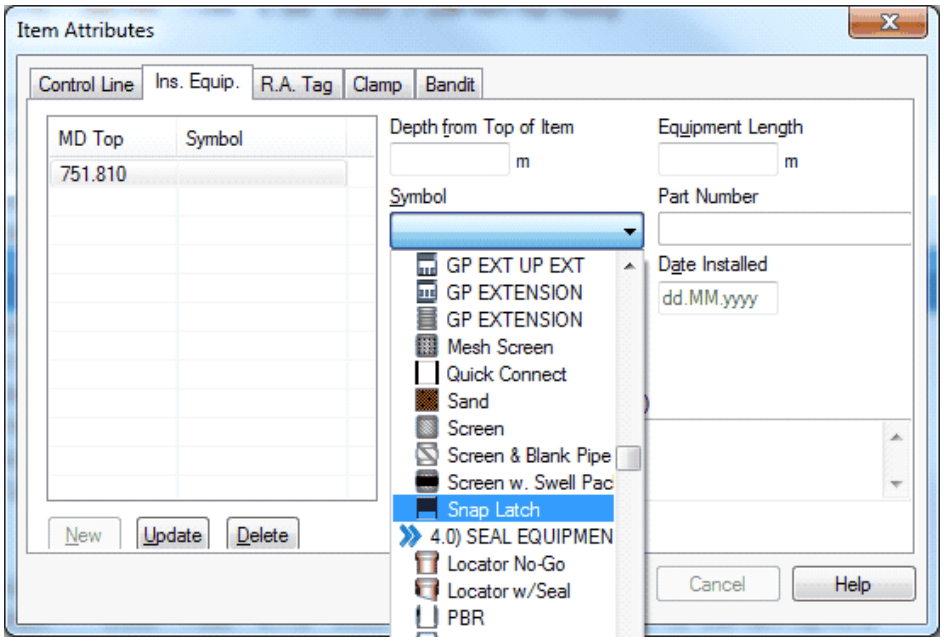
Delete the dummy valve (and the latch) and click **New**. In the dropdown under **Symbol**, find **2.2) Inserted equipment** and **Inserted Gas Lift valve**:

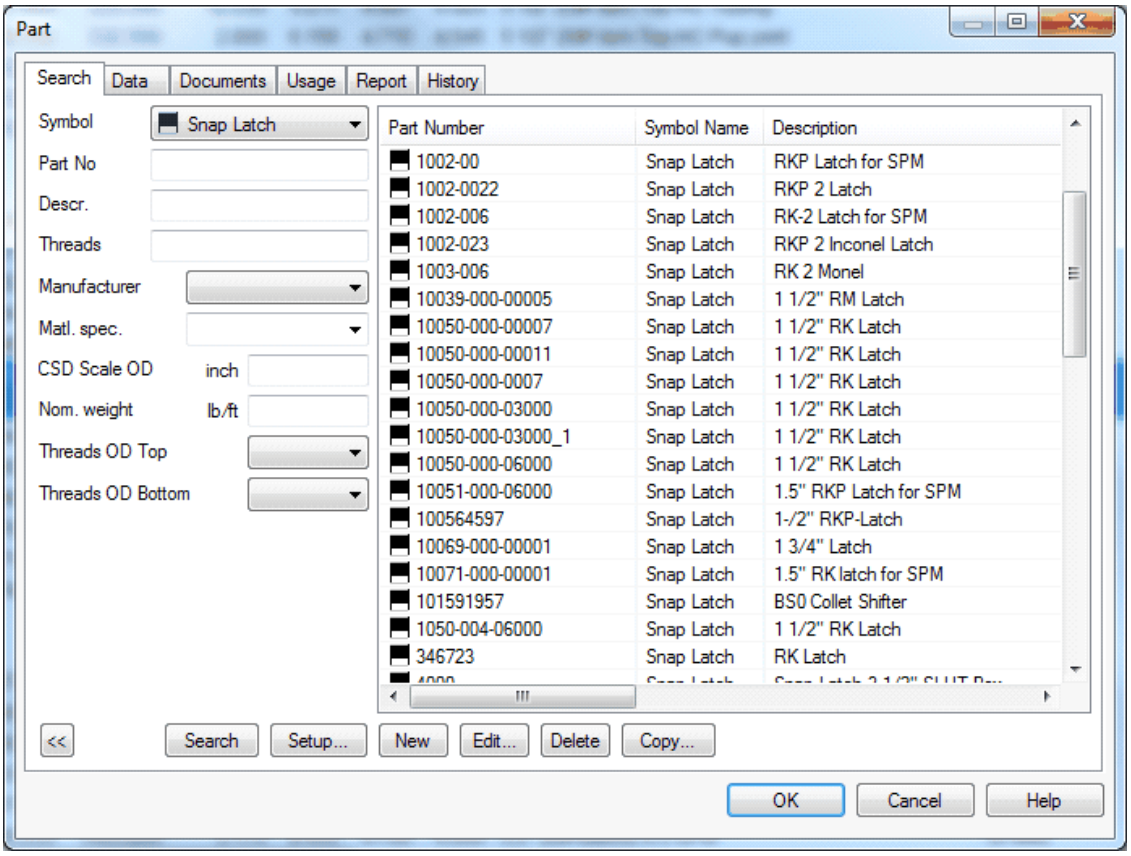


Then find your GLV in the list that pops up and click **OK**. You can search for your item by entering information in the fields on the left side, and press Enter. (If you can't find it please contact Help & Support to get the item added to the database).



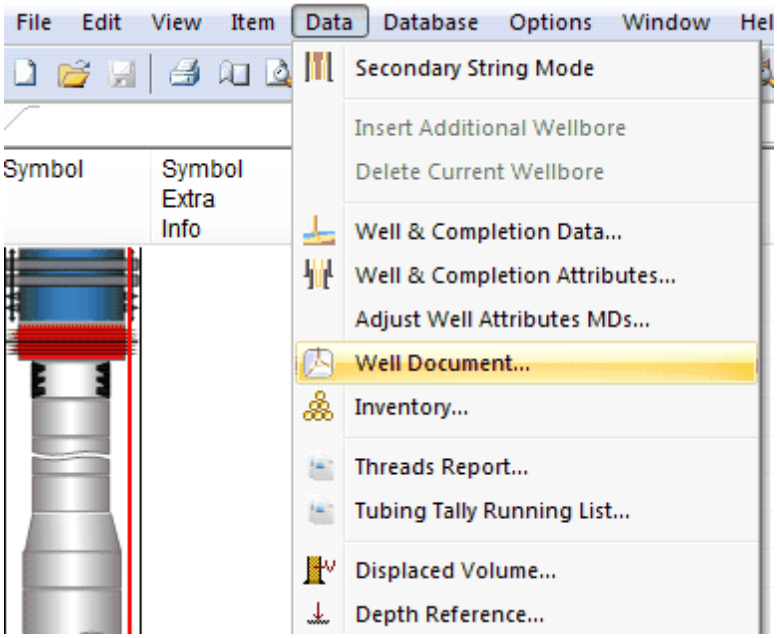
Do the same for the latch:



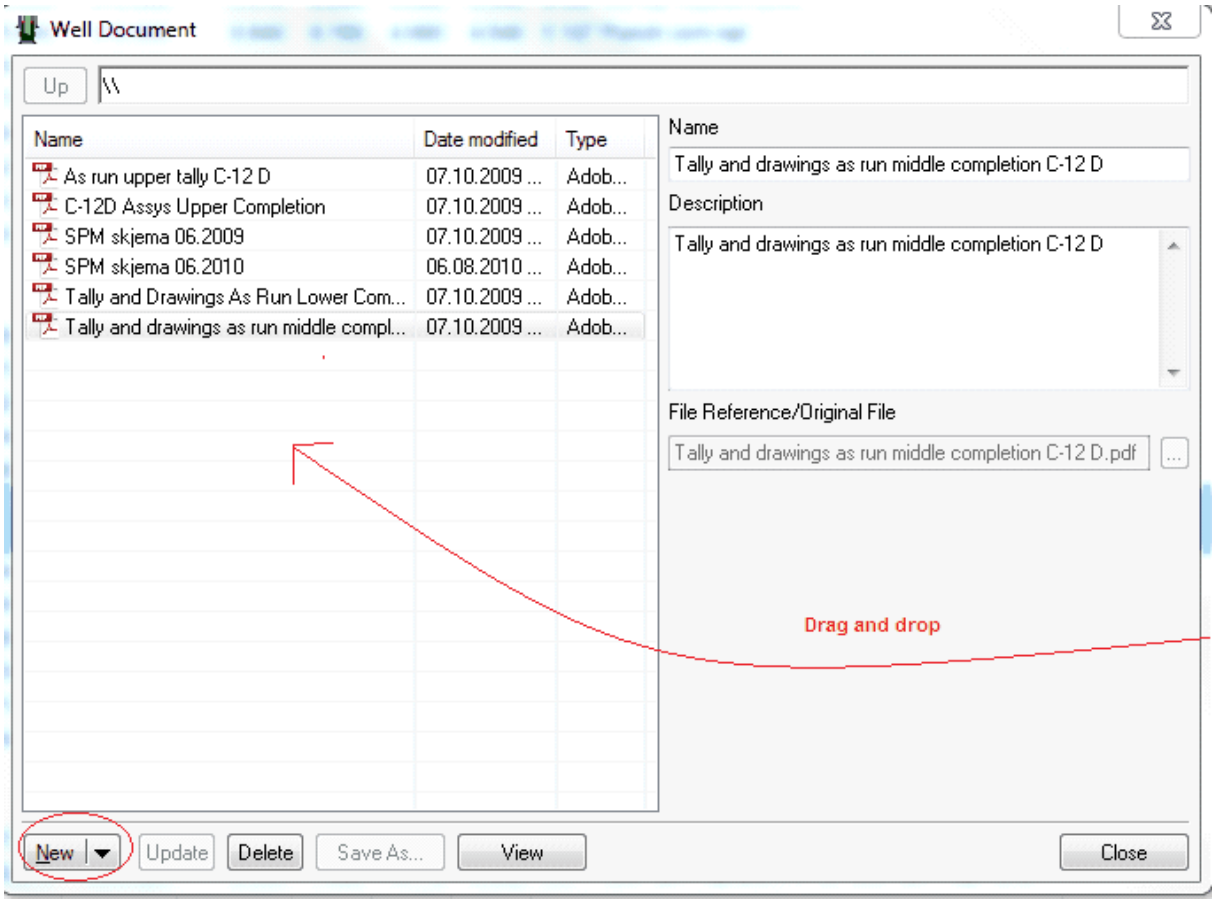


You should add serial number, installed date and any comments. Also you can adjust the depth of the symbol within the SPM by specifying **depth from top of item** – Then click OK.

You should always add relevant documents to the well in CSD. After this type of operation a SPM work sheet should be added. To add documents to a well in CSD click on **Data** and choose **Well document…**



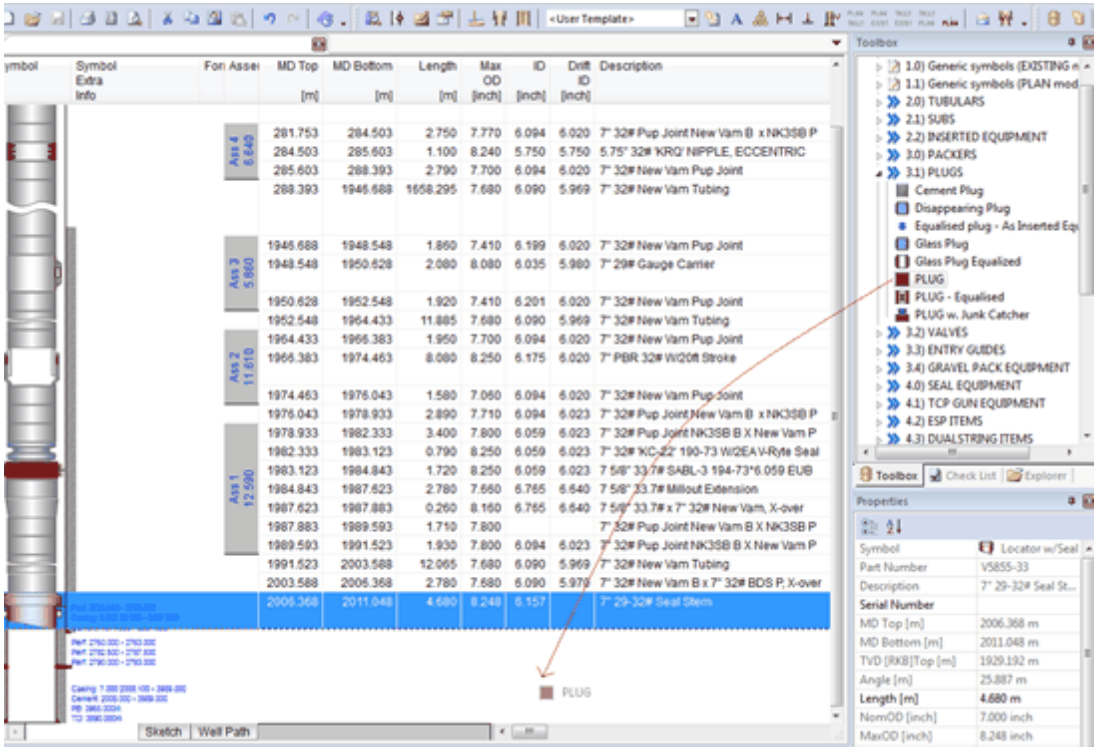
Then "drag and drop" the file from a folder, or click on **New** – **Document From file**, find the file and click on **Open:**



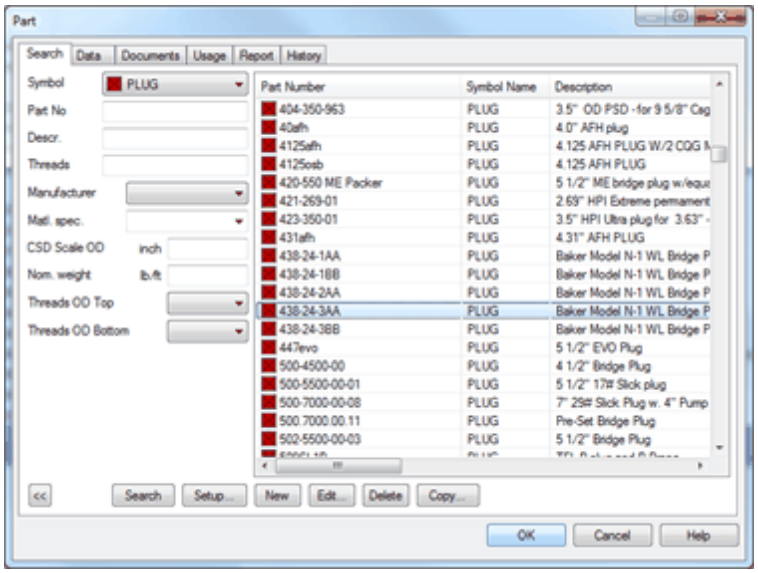
NOTE! Remember to register a failure on the valve if it was replaced due to failure. See the Equipment Failure Registration chapter.

1.6.4 How To Set Plug In liner

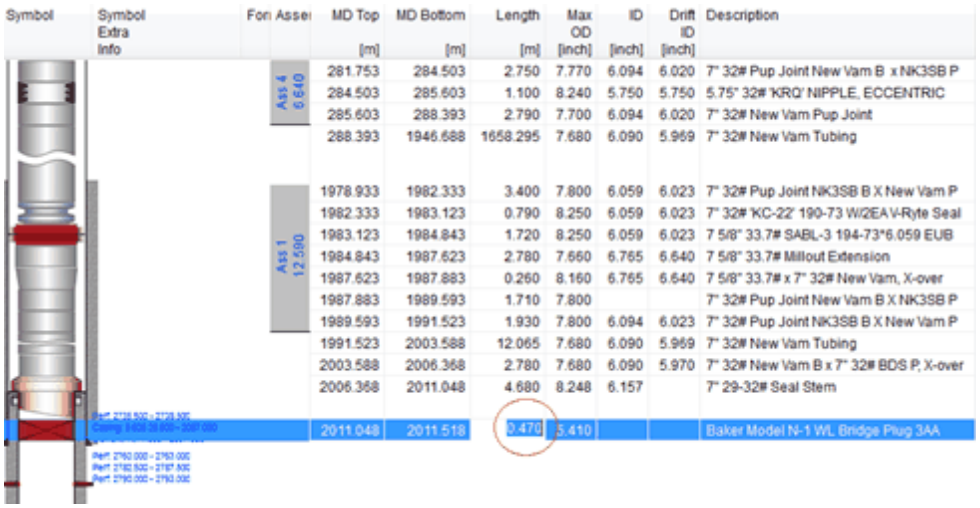
Go to **Toolbox** on the top right. Choose type of plug, and drag it down below the last part in the completion string:



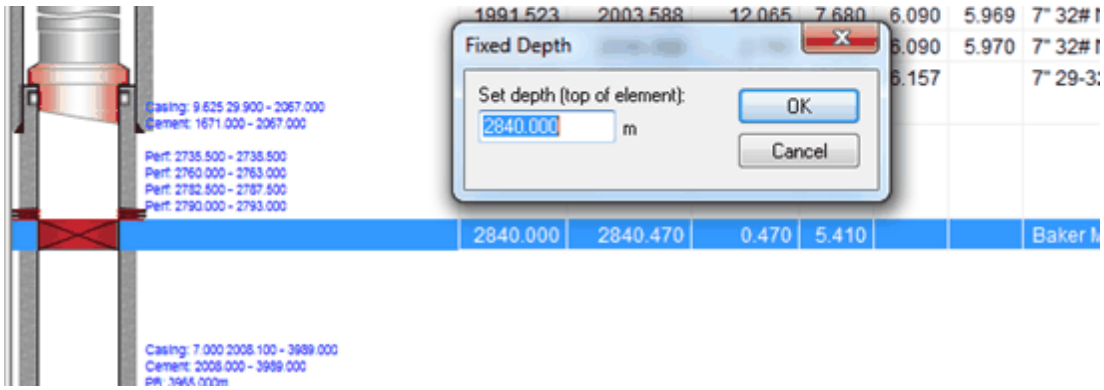
Find your plug in the list that pops up and click **OK**. You can search for your item by entering information in the fields on the left side, and press Enter. (If you can't find it please contact Help & Support to get the item added to the database):



Change the length of the plug by highlighting the plug and then click the length:

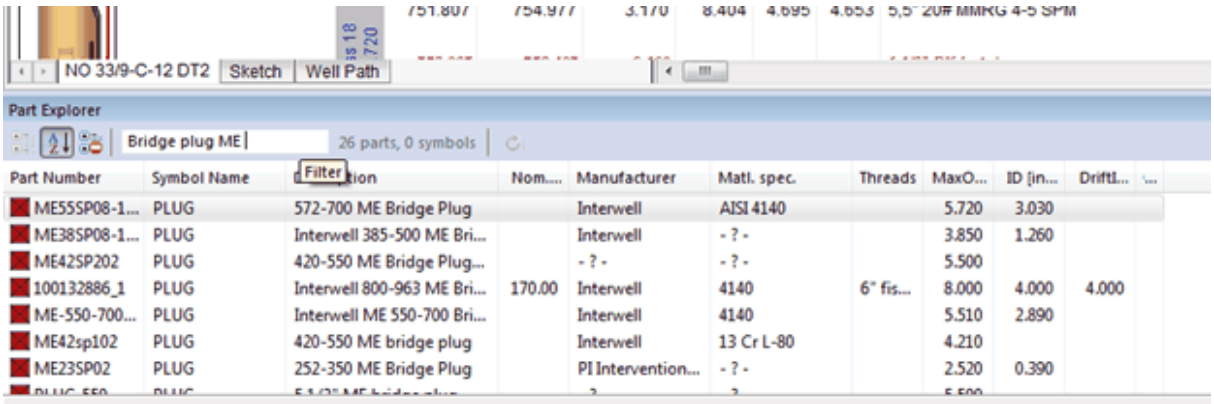


Then right click on the part, choose **Fixed Depth** and enter the **MD Top** of the plug:

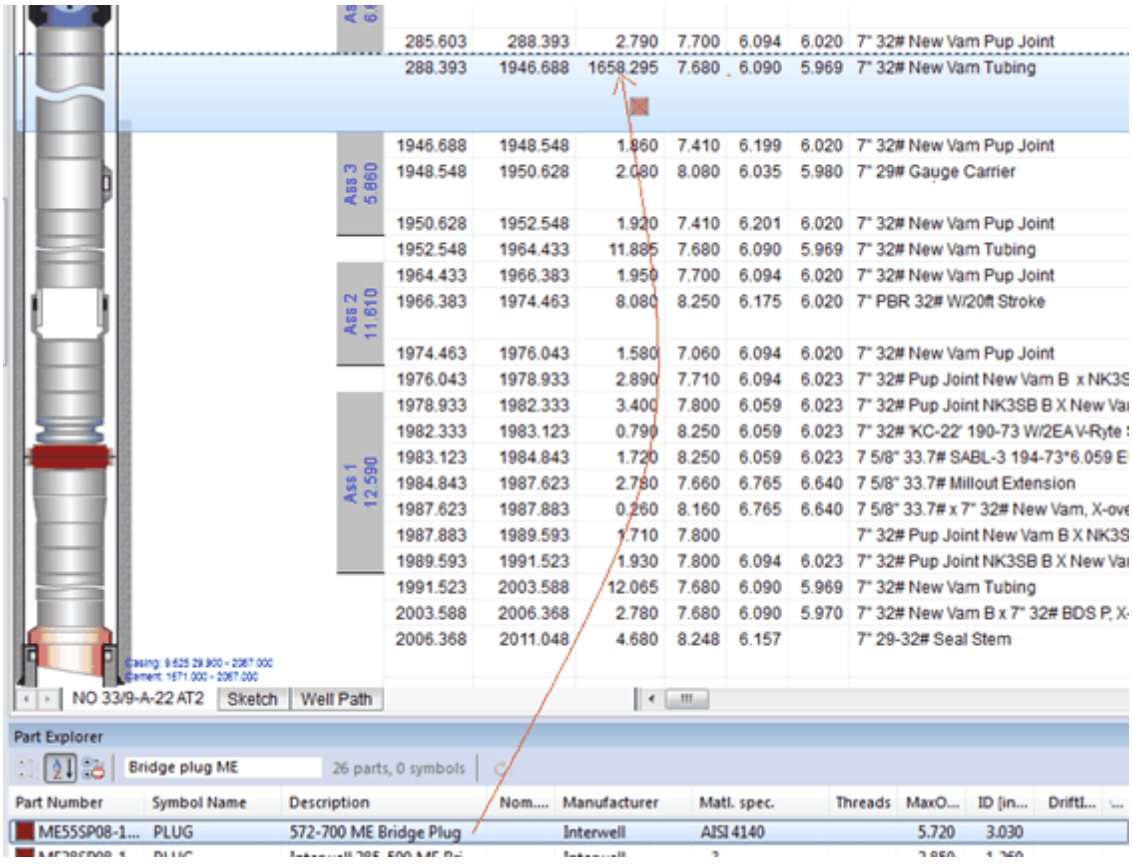


1.6.5 How To Set Plug In Tubing

Search for your plug in the Part explorer by entering any information i.e. part no or description (If you can't find it please contact Help & Support to get the item added to the database):

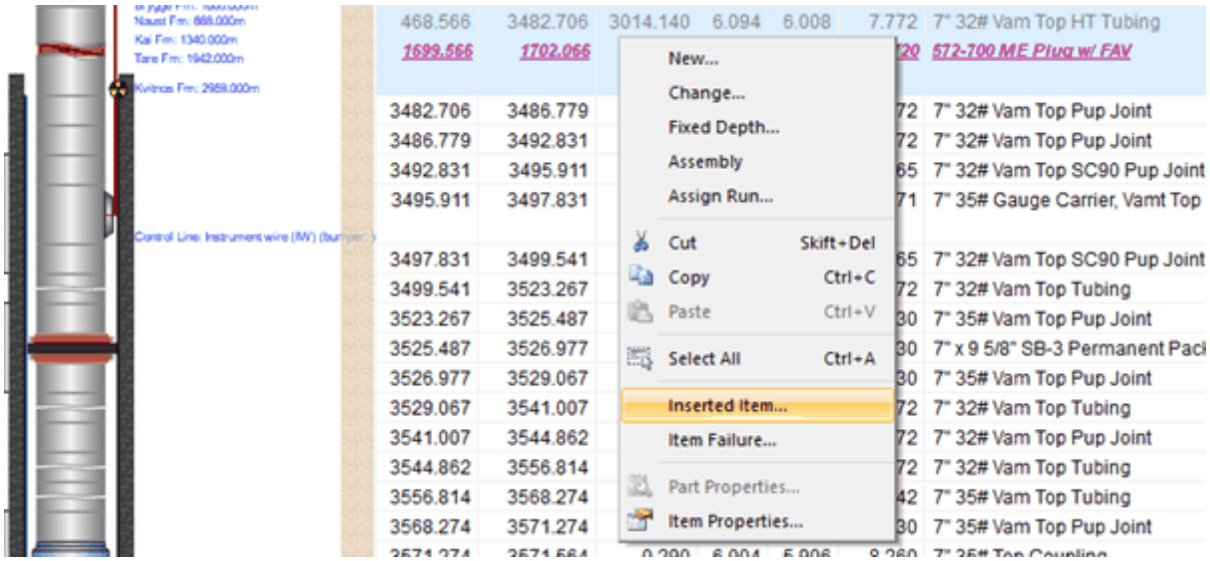


Then while holding down the **Ctrl** key on your keyboard:
Drag the plug to the tubing in which the plug is to be set inside of, and drop it:

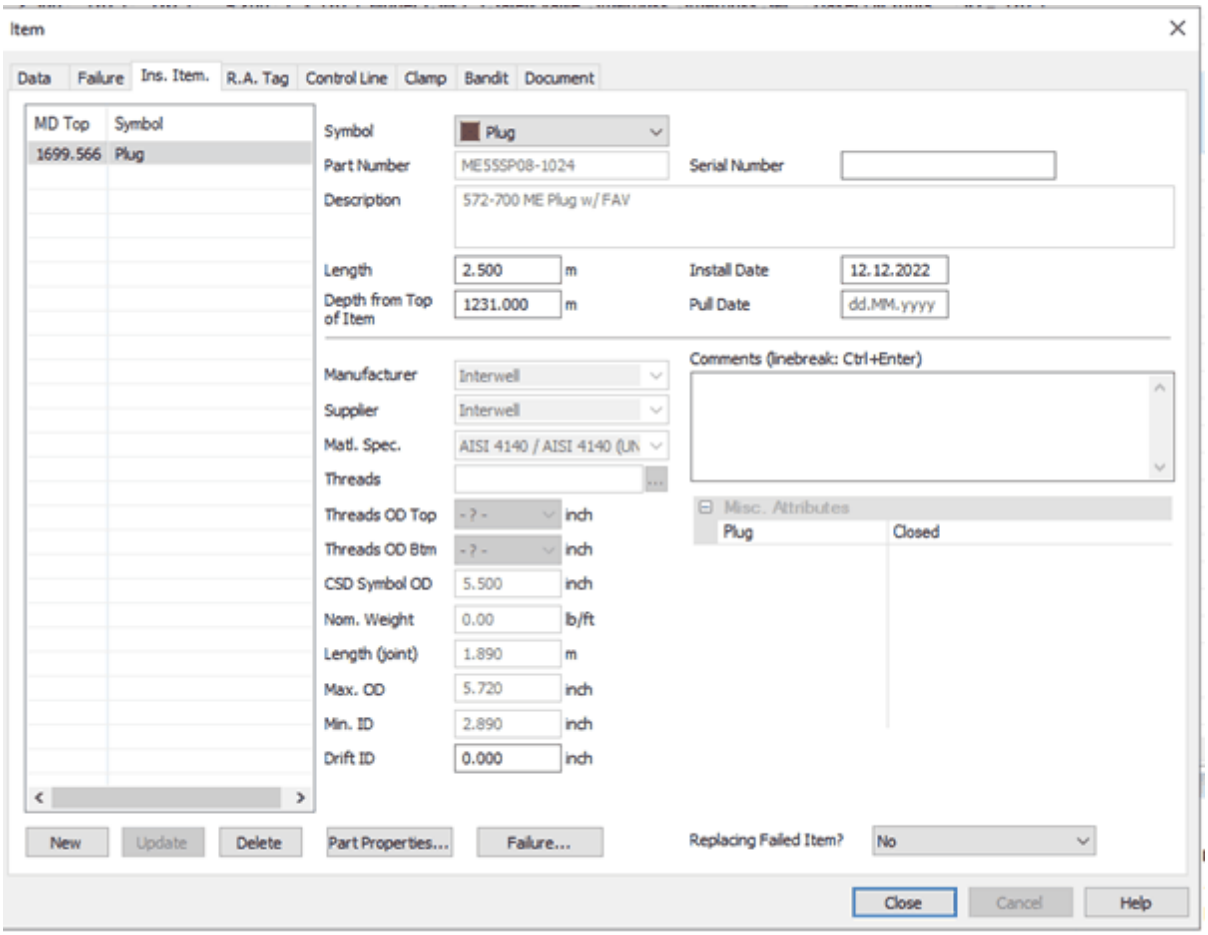


You will now see the plug inside the tubing, but to adjust the depth right click on the tubing

and click on **Inserted Item...:**

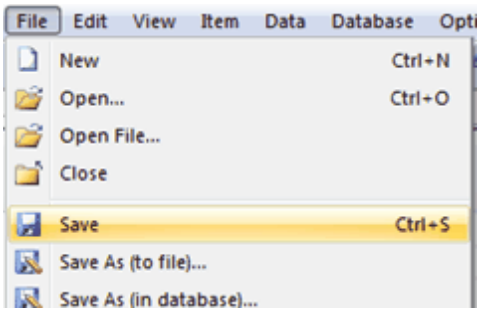


Enter the length and Depth from Top of Item, and other data that might be useful and click **Update** and **Close**. In this example the plug is 2.5m and set at 1699.5m:

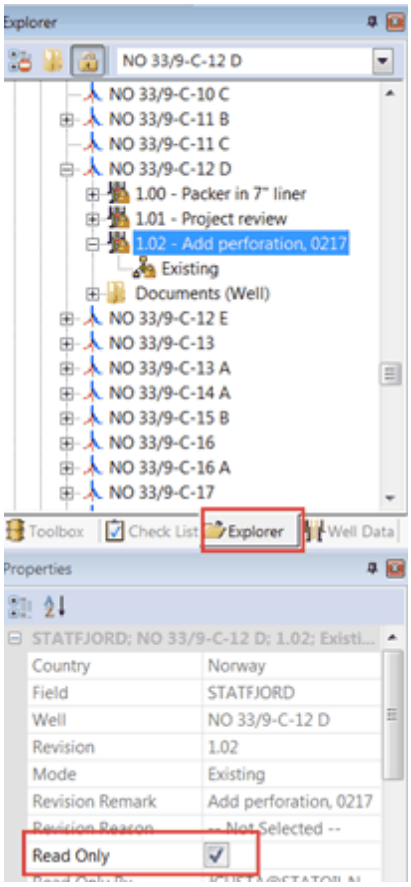


1.6.6 Save The Changes, And Set The New Revision To Read-only

Save the revision:



When the revision is saved, please set it to **Read Only** by going to **Explorer**, highlight your revision and check the "**Read Only**" box:



1.7 Equipment Failure Registration

1.7.1 Introduction

All failures are registered in one common window, independent of type of equipment (completion item, casing, etc.) that has failed. A read-only list of failures can be opened from menu entries for the specific equipment elements.

All types of failures, except general well failures, need to be registered on a specific CSD revision. Previous Existing revisions are not selectable. All failures in Existing revisions are copied to any future revision.

Warning symbols for elements in the completion string with a failure, are not displayed in revisions before the one the failure was registered on. I.e., this symbol reflects the time the failure was *revealed*. The Failure Date entered by the user reflects when the failure *occurred*.

If a failed equipment is replaced or removed, a new revision in CSD must be created, reflecting the changes.

If an item being a part of the completion string is replaced (due to failure) in connection with the initial installation, the failure should be registered in the Plan revision.

1.7.2 Data Needed For Automatic Calculations

To maintain good quality of the data, CSD uses information already registered on the item, such as Install date, to calculate Days to Failure.

The basis for the Days to failure calculations is as follows:

Completion Item Failure: Item Install Date

Inserted Item Failure: Inserted Item Install Date

Control Line Failure: Item Install date
Contingency: Tubing Install Date

Casing Failure: *Days to Failure to be entered manually*

Casing Attribute (Cement) Failure: Casing Attribute Install Date

General well / not identified: *Days to Failure to be entered manually*

Equally important as Install date, is Pull date; to control if equipment is included or not in failure reports and other equipment overviews. If the failed equipment is replaced, the pull date must still be registered in the current revision, and a new revision with the new item be made in CSD.

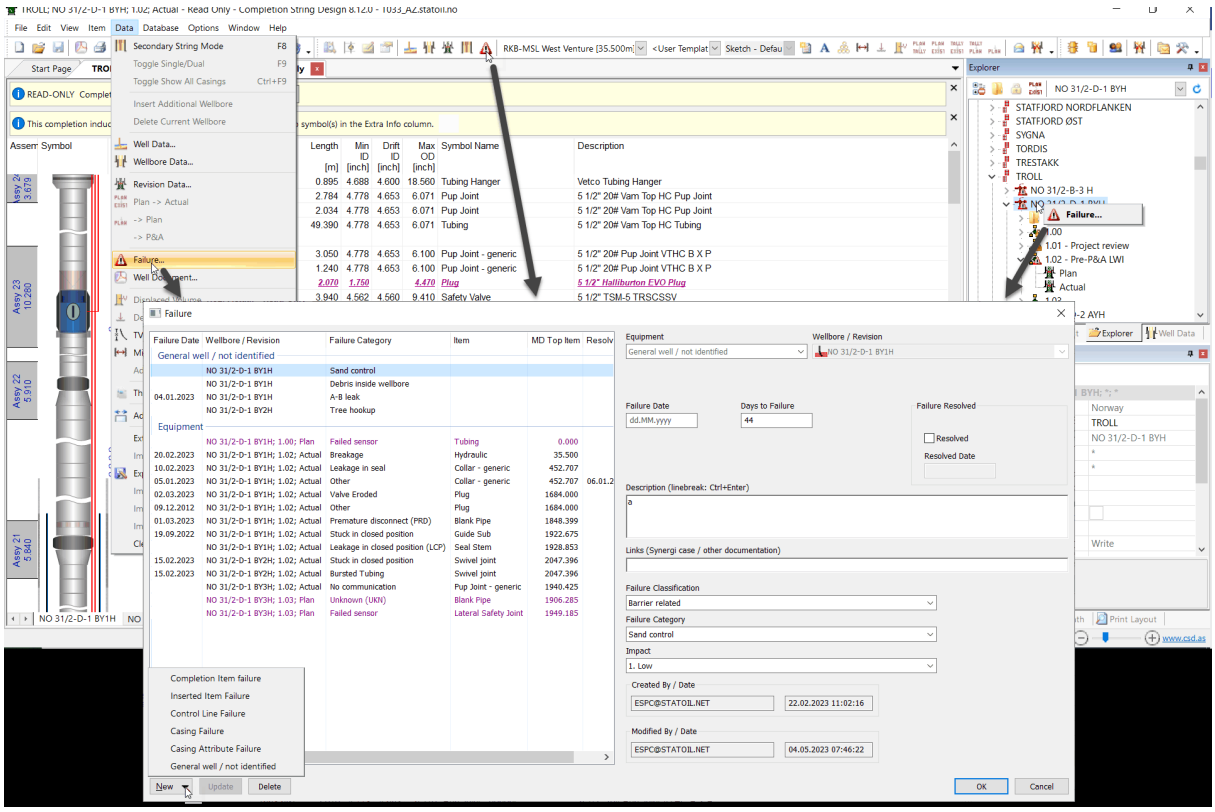
Registration of Install date and Pull date are vital for correct data in reports and equipment overviews. If the equipment has not been installed or pulled together with the tubing, these dates are required on item level to avoid incorrect data.

1.7.3 How To Register Failures

Registration of all failure are done in the Failure window.

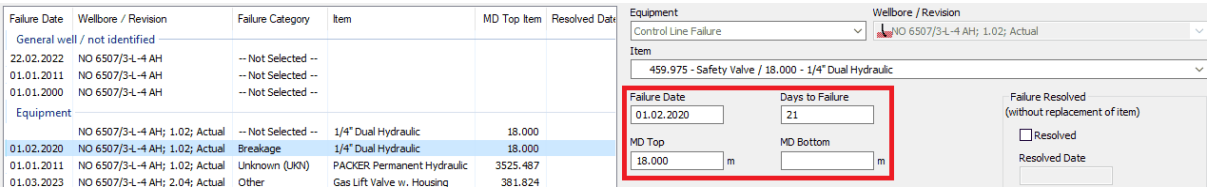
NOTE: Failure registration is possible when the revision is opened in Read Only mode (default), or closed.

The Failure dialog can be opened from three different locations: Right-click on the well in the Explorer window, from the CSD top menu and from the Failure icon on the Toolbar:



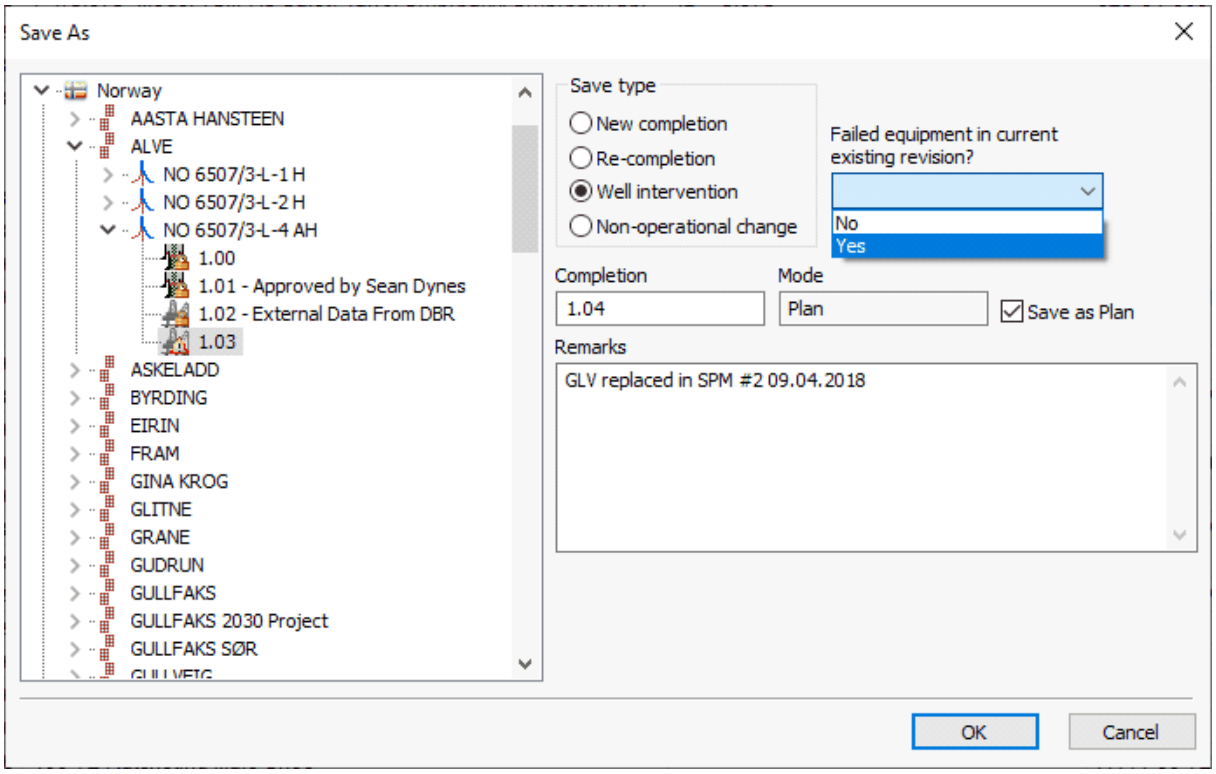
For failures registered on specific equipment, CSD automatically suggests MD Top and Days to failure if installation date is registered.

Failure date is not required if unknown. Days to failure will then be calculated based on the failure registration date.



1.7.4 How To Create New Revision When Equipment Is Removed Or Replaced

Choose File – Save As (In Database).
In the ”Save As” dialog choose **Save type**: *Well Intervention*, and choose *Yes* in the dropdown for “**Failed equipment in current existing revision**? Enter a short explanatory text in the **Remarks field**. E.G. “*GLV replaced in SPM #2 09.04.2018*”.



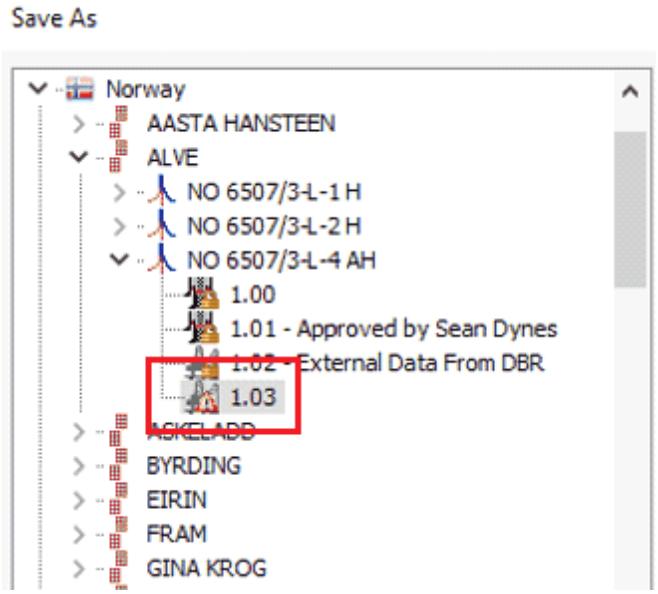
NOTE! If no failure has been registered in the current revision, when you select "Yes" in the dropdown; CSD will not let you save to a new revision. You first need to register the failure.

Remember to register Pull Date in the previous existing revision!

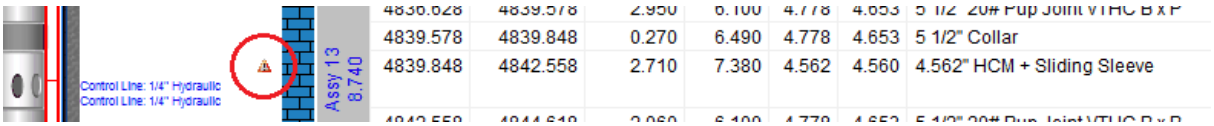
1.7.5 Visualization Of Failures

When a general well failure has been registered, a warning sign will appear on the relevant well in the Explorer menu:

If a failure has been registered on a specific CSD revision, a warning sign appears on the revision icon:

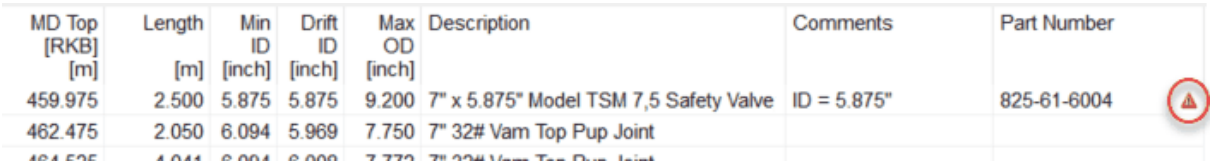


If the failure is registered on an element in the completion string, a warning sign will show in the schematic next to the item, in the “Extra Info” column:

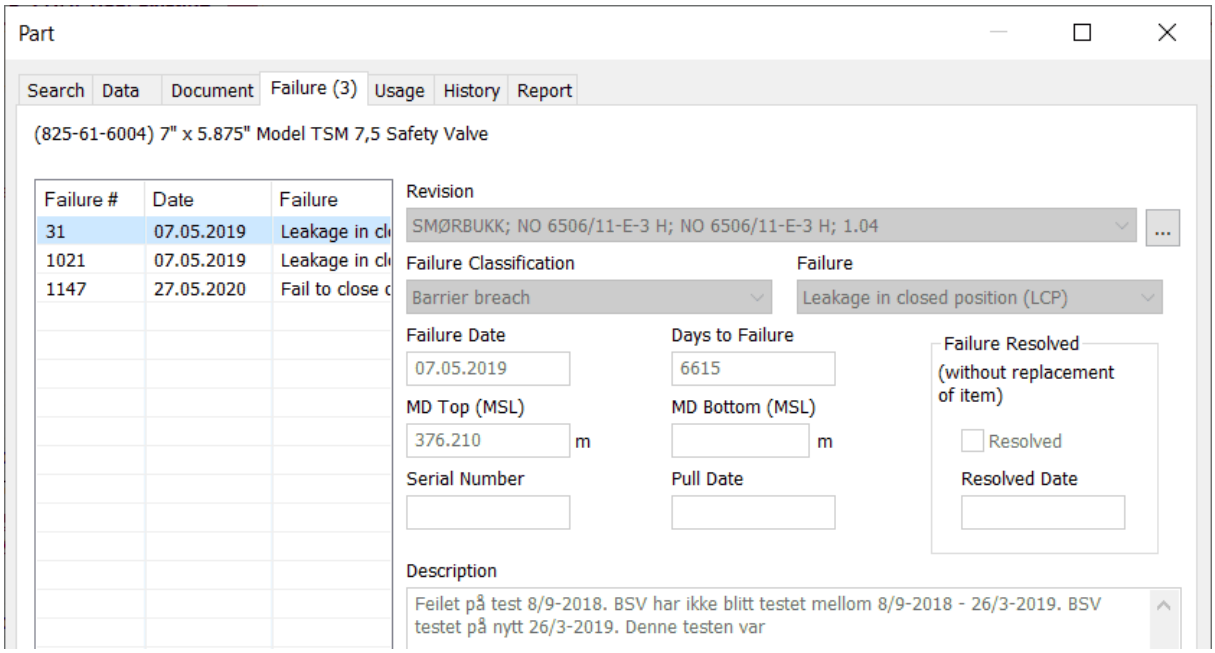


By ckicking on this icon, a (read-only) list of failures for the relevant item will open.

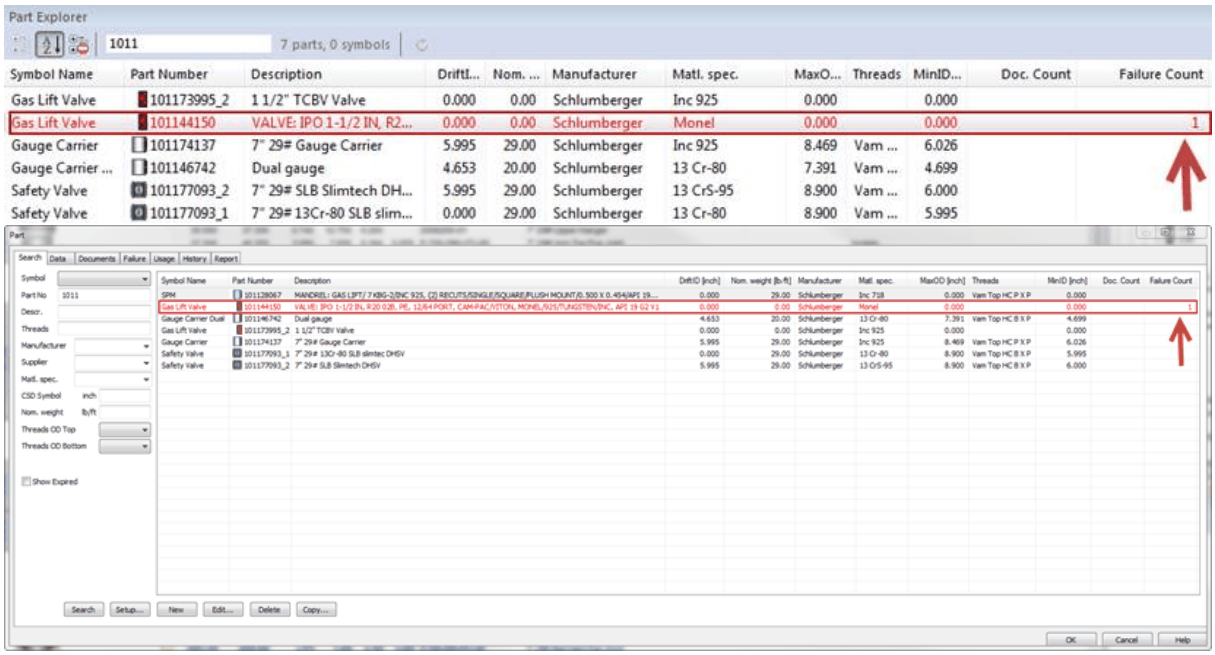
In the ‘’Part Number’’ column in the schematic a warning sign will appear for all items with a part number with registered failures(s) in any well/revision:



By clicking on this icon, list of failures for the relevant part will open.

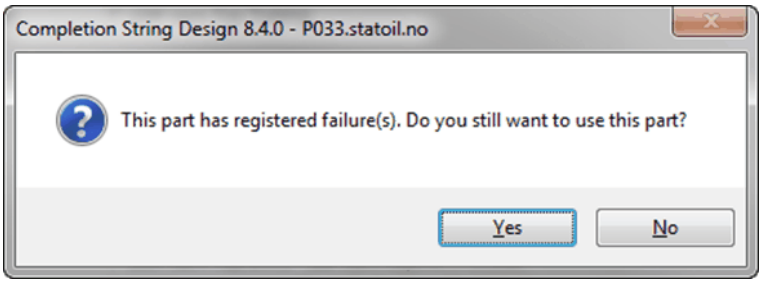


In Part Explorer and the Part dialog a part with registered failure(s) will appear in red font:



The Failure Count column indicates the number of failures registered on a part.

When a user attempts to use a part with a registered failure, a pop-up window will appear to notify the user that the part has registered failure(s):



1.8 Inventory, Transition between modes

An important part of CSD is the transition between modes. With modes we mean Plan, Tally and Existing. When a string is built initially, this is done in Plan mode. When you go to Tally mode, the length of each joint can be registered.

1.8.1 Simple Tally (without pipe inventory)

When going from Plan to Tally, all tubing joints will be given a Tag joint number. CSD calculates how many joints that are needed. You will be asked if you want the tag joint number to start from 1 or from another number. The Tag joint number represents how many joints that is available for putting into the well.

The Tag joint numbers are generated using the following rules:

- The tubing joints are numerated from top to bottom
- Tubing sections get different tag joint number series if they have different part number
- If the tubing sections are configured in the following way: A, B, A, then A will have one tag joint number series.

When going from Tally to Existing, all consecutive tubing joints will be "collapsed" into one symbol (as in Plan).

1.8.2 Tally with Pipe Inventory

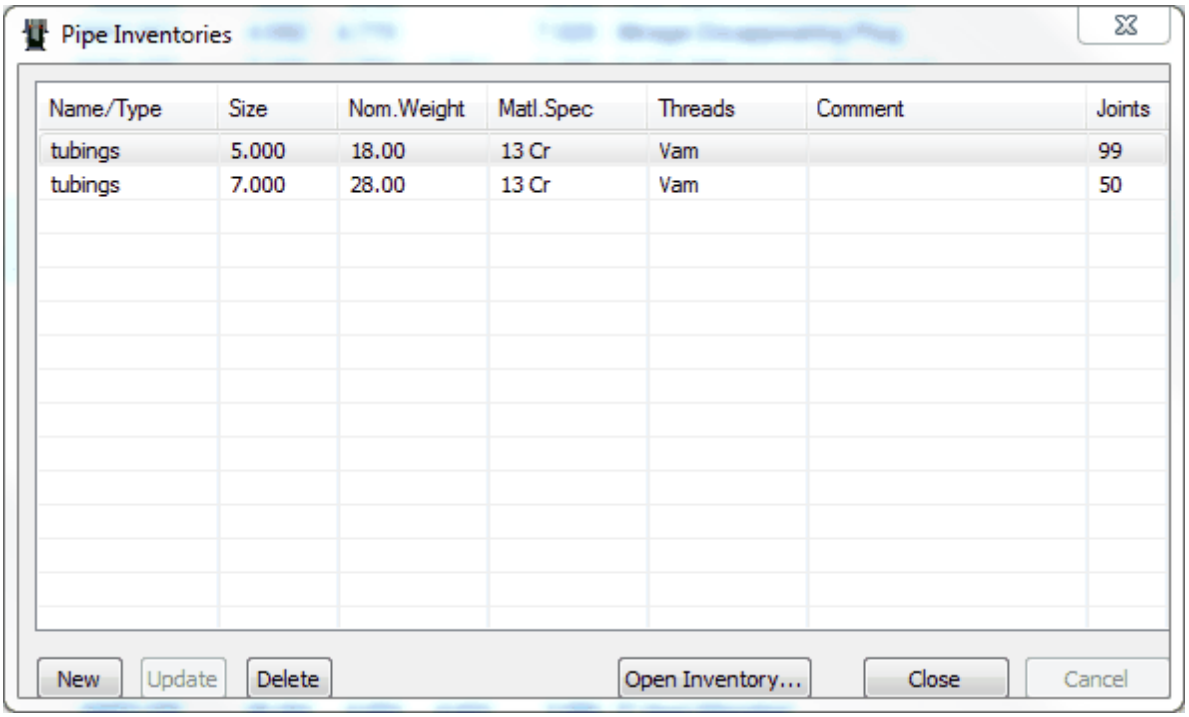
Pipe Inventory allows the user to set lengths on all joints in the offshore inventory. There is a connection between the elements in the CSD schematic and the joints in the inventory. The work flow is created so that it matches the way the tally operation is executed offshore.

1.8.2.1 Construction of Pipe Inventory

To build a pipe inventory, choose Data, Inventory. If you haven't already created an inventory, CSD will ask during the plan to tally transition if you want to use the pipe inventory functionality. If you select 'No', CSD will use the simple tally. If you select 'Yes', you will be presented with the Pipe Inventory dialog box.

1.8.2.1.1 Pipe Inventory

This is the main dialog box for registering pipe inventories:



Even though this dialog box only contains a table, it still follows the CSD standard for entering data. The difference is that the cells in the table work as input fields/drop down fields. As all details about a row are visible, the table gives a better overview of the data.

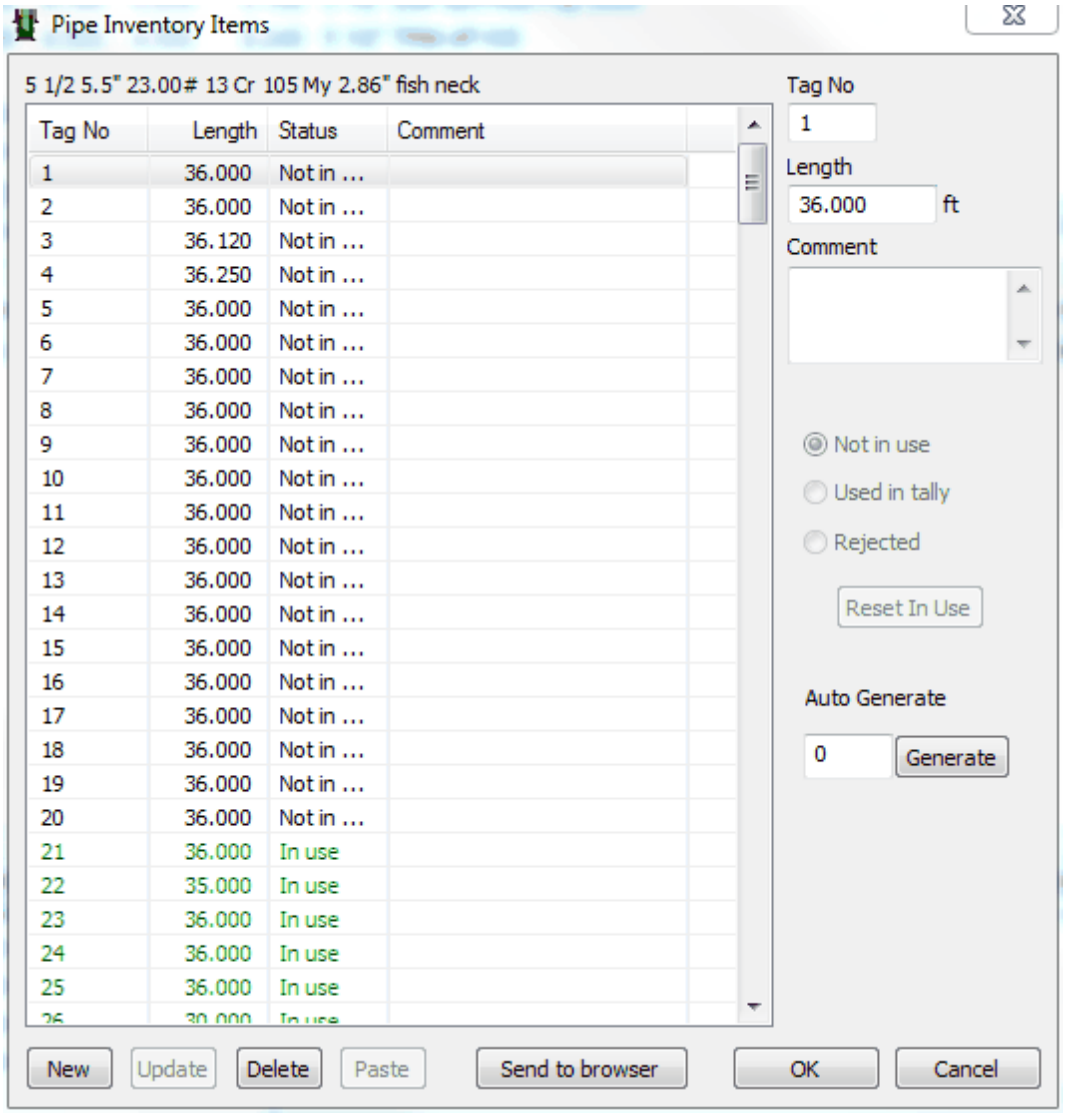
When pressing the 'New' button, a row is added to the table. Enter Name/Type for the pipes in the inventory, and move to the next cell. Enter Size. Repeat this for Nom Weight, Matl. Spec. and Comments. To move between the input fields in the table, use the Tab key, and use the mouse to move to the drop down fields. When done registering data about the inventory, click the Update button. The Open Inventory button will now be enabled, and clicking it will open the dialog box for registration of the pipes in the inventory (Pipe Inventory Item).

To delete an inventory, choose the row with the inventory to delete, and click the Delete button. All pipes (Pipe Inventory Items) for this inventory are also deleted.
The last column in the table shows the available amount of pipes in that inventory.

The last column in the table shows the available amount of pipes in that inventory.

1.8.2.1.2 Pipe Inventory Items

This dialog box is where all joints for the inventory are registered. The table shows the currently selected inventory:

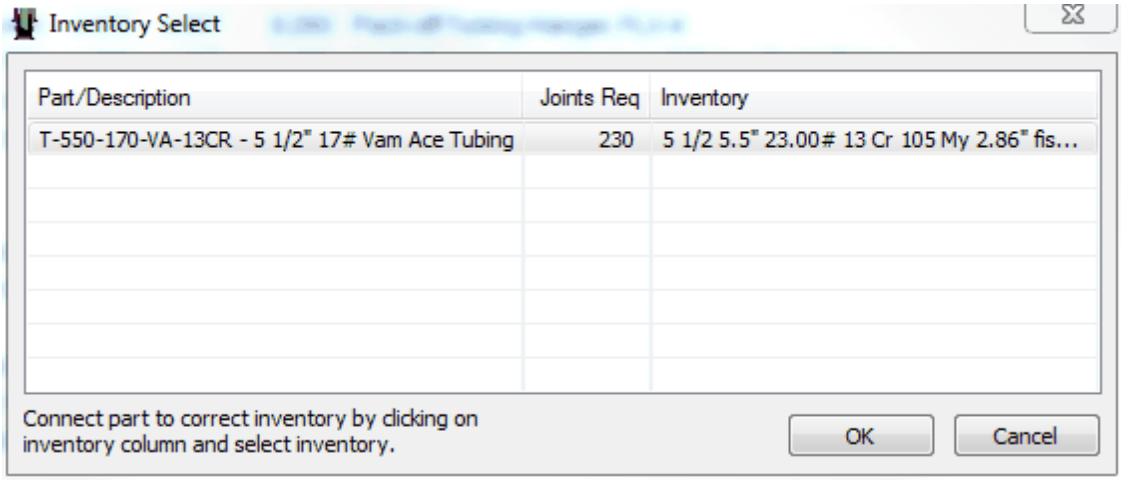


Start by pressing the “New” button. Enter values for Tag Number, Length, and Comment. The Status column will initially be Not in Use. It is now possible to duplicate this joint to build a complete inventory. Make certain that the joint you want to duplicate is selected, enter the number of joints in the field Auto Generate, and press the Generate button. The Tag Number you entered for the first row will be used as the first number in this series of joints, i.e. all the generated joints get increasing tag numbers above this one. Identical tag numbers are not allowed. It is also possible to add joints by copy this from excel spread sheet and press Paste button.

Adjusting joint lengths: this is easily achieved by using the table as a spread sheet. Select the Length cell for the joint you wish to change, and enter the length. To move to the cell (joint) above or below, use the arrow buttons on the keyboard. Moving to another row or pressing Enter will accept the changes. To cancel editing, press Escape.

1.8.2.2 Transition from Plan to Tally

If a pipe inventory exists, the following dialog box will appear when going from plan to tally. You will need to choose which inventory to use pipes from in the different tubing sections. If the number of joints is insufficient, you will be notified.

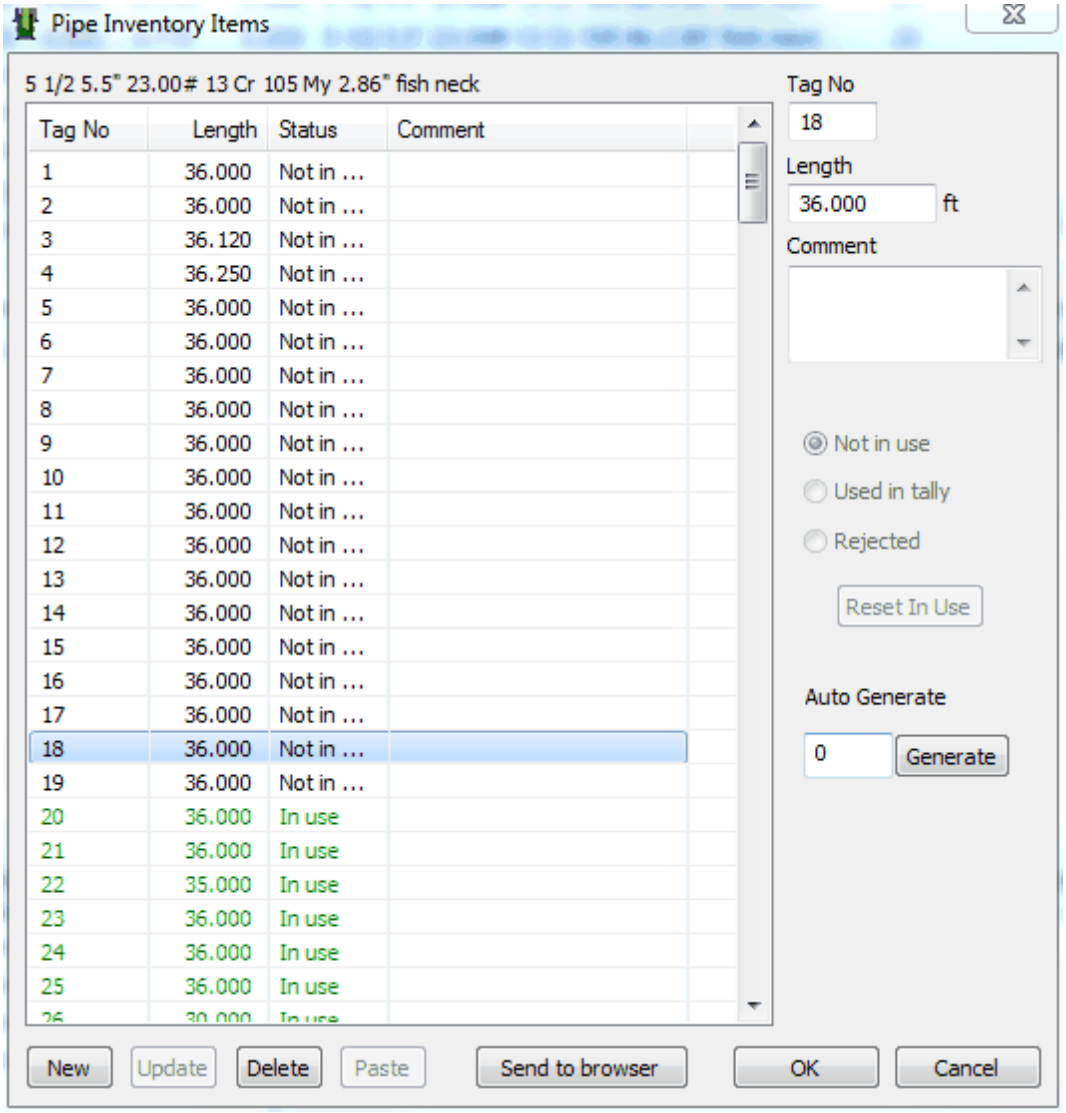


1.8.2.3 Operation in Tally against Pipe Inventory

In tally mode, each individual joint will have a link to the pipe inventory. This link allows several operations to be performed, which are described in this chapter. Most of these operations are available through the right mouse button (short menu) or the Item menu.

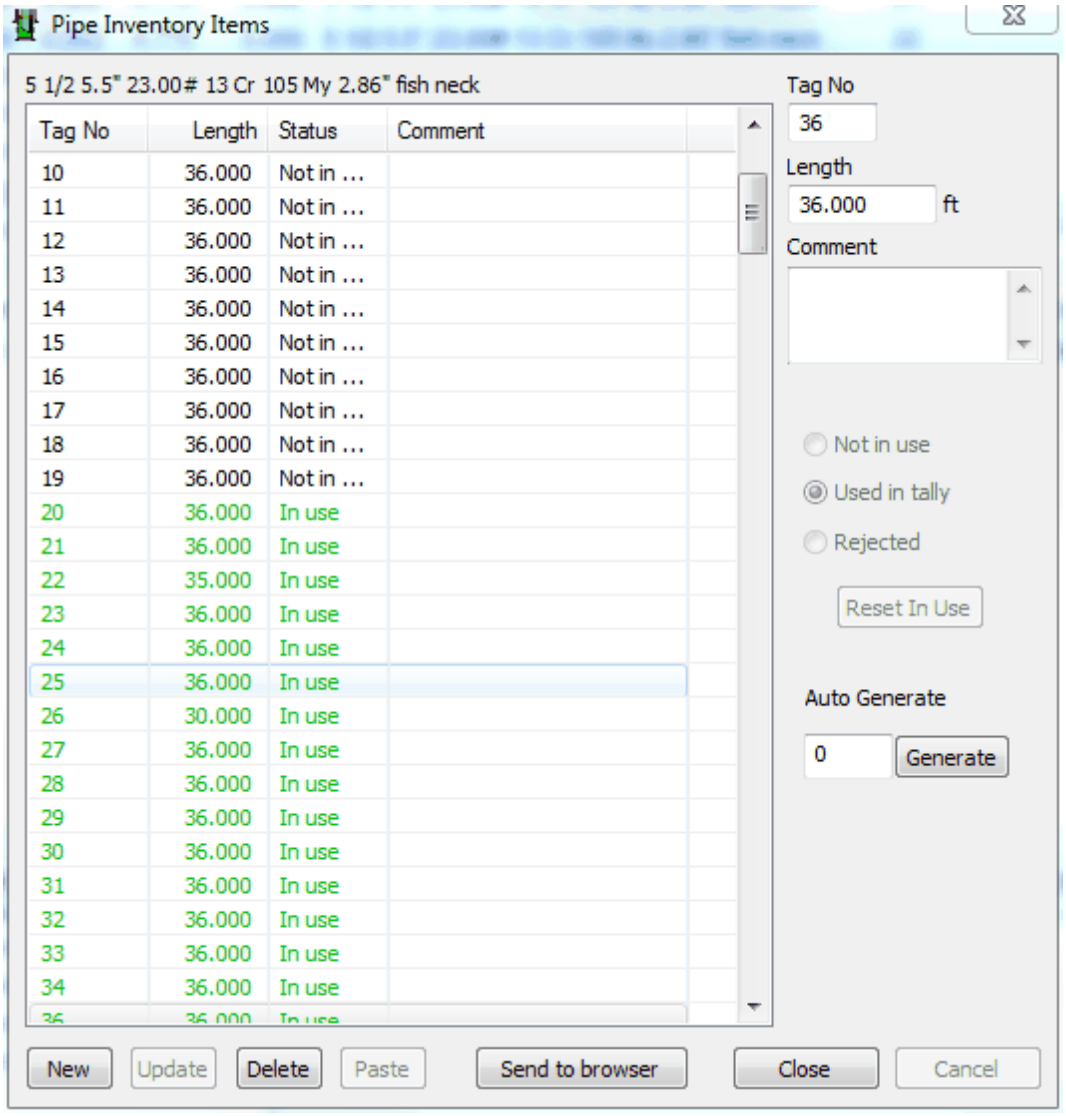
Reject joint: In some cases it is necessary to remove joints from the tally, due to thread cutting, make up problems, etc. To remove a joint from the tally, choose the joint in the schematic, click the right mouse button, and select Reject Joint. You will then be asked if you wish to replace this joint with another one from the pipe inventory. If a joint is rejected, this will be indicated with red in the pipe inventory, and it cannot be used elsewhere.

Insert similar joint from inventory: To insert a joint from the inventory, choose a joint which is already in the schematic, click the right mouse button, and select Insert Similar Joint from Inventory. Then select a joint in the inventory. You cannot use a joint twice, or use a joint which is marked as rejected. The new joint is added to the Schematic.



Copy/Paste - Attach to inventory item: To add a new joint it is also possible to use copy/paste. First select the joint to copy, and paste it into the schematic. This manual copy operation will remove the link to the inventory. The link can be re-established by choosing Attach to Inventory Item from the Item menu. You cannot use a joint twice, or use a joint which is marked as rejected.

Note that in this case you may choose from all joints in all inventories. Make sure that you choose a joint from the correct inventory.

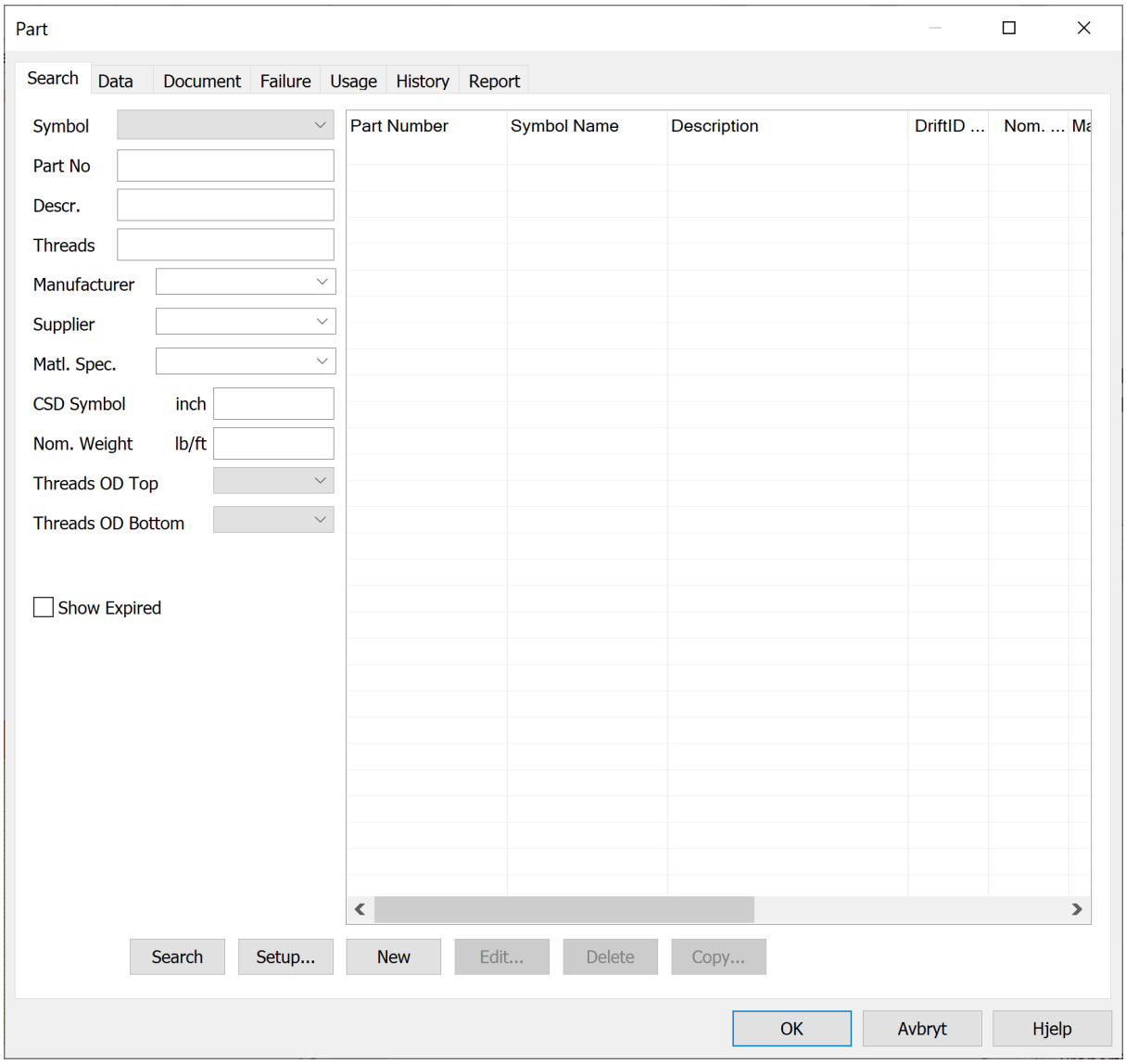


Lengths: It is possible to adjust the lengths of each joint if needed. This can be done either in the schematic or in the pipe inventory, and changes are updated in both places automatically.

Printing: If you need a hard copy of the pipe inventory, enter the Pipe Inventory dialog, and press the button Send to Browser. The list of joints in the inventory will then be presented in your web browser. From the browser you can choose print, or copy the data to Excel or other software.

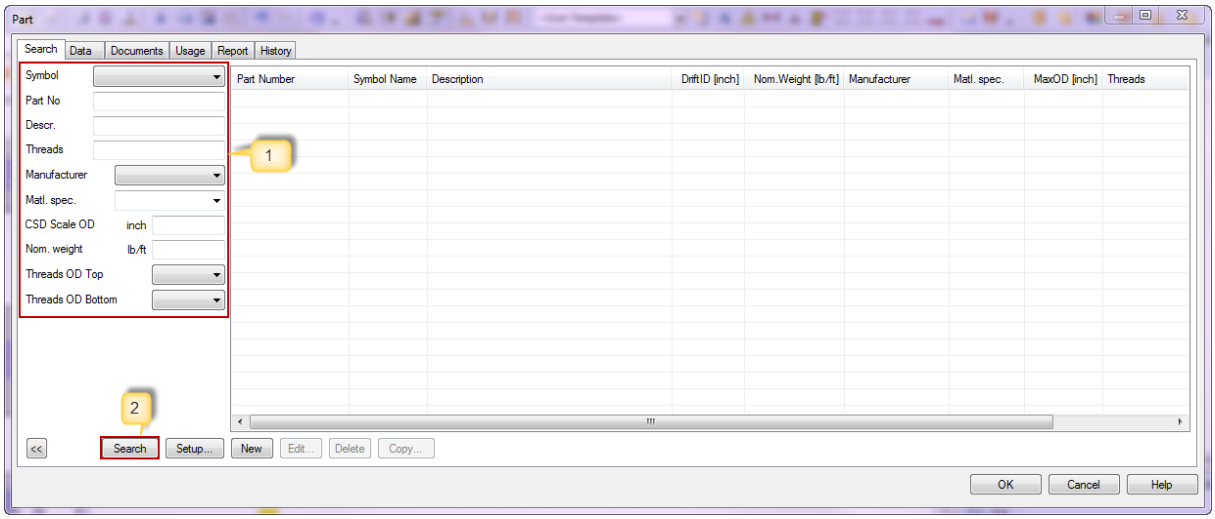
1.9 Part

Choose Parts... in the Database menu. The System Administrator will handle registration of equipment in the database.
By default, engineers have read access to this dialog, but are allowed to search for parts in the database.



1.9.1 Search

Search for a part in the Search tab:



1. Enter information in the description columns

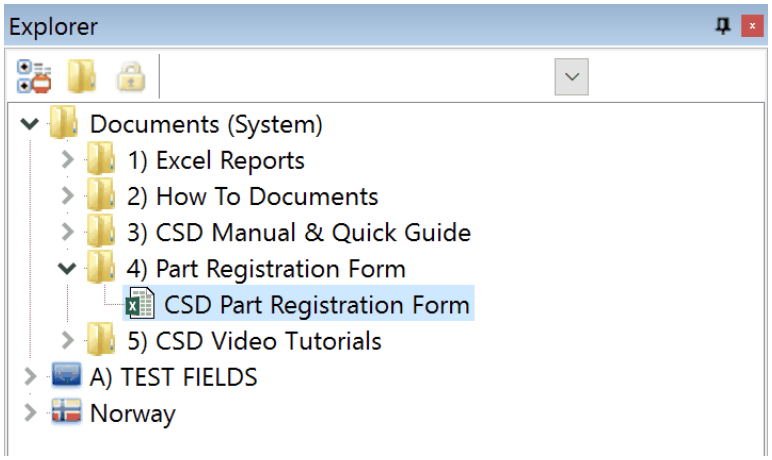
2. Select Search. Based on the information entered, CSD finds parts matching with this.

Input	Description
Symbol	Scroll down and choose between the symbols
Part No	A unique part number for the part. Usually given in assy dwg from the supplier
Descr.	A short description of the part
Threads	Also known as coupling
Manufacturer	Manufacturer of the part
Matl. Spec.	Material Specification
CSD Scale OD	Scaling OD for part. Usually the same as Threads OD Top (inch)
Nom. weight	Nominal weight to the part
Threads OD Top	Outer diameter at top
Threads OD Bottom	Outer diameter at bottom

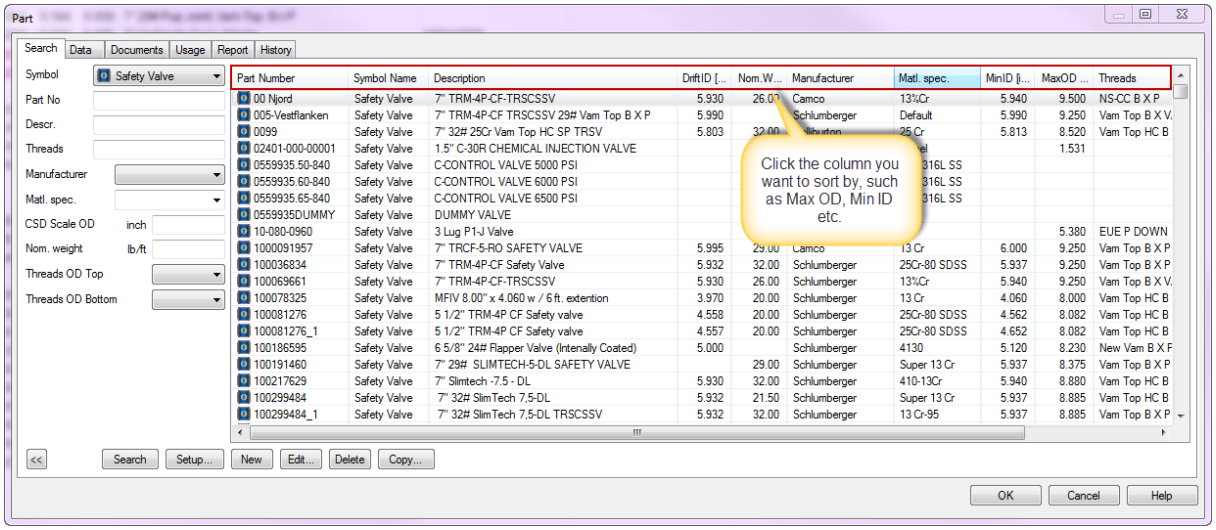
The search field CSD Scale OD and Nom. Weight are special. The values entered are starting point for intervals. The size of the interval is adjusted in Setup. Choosing the tab Misc, you find the

fields under Part Search Precision. As a example: If CSD Scale OD search precision is 0.1 and you enter 5 in your search, all CSD Scale between 4.9 and 5.1 are included in the search.

If the part you are looking for missing in equipment database, please fill out an standard excel sheet for part registration in CSD, and contact CSD Help and Support to create this for you. The CSD Part Registration Form can be found in the open dialog box:

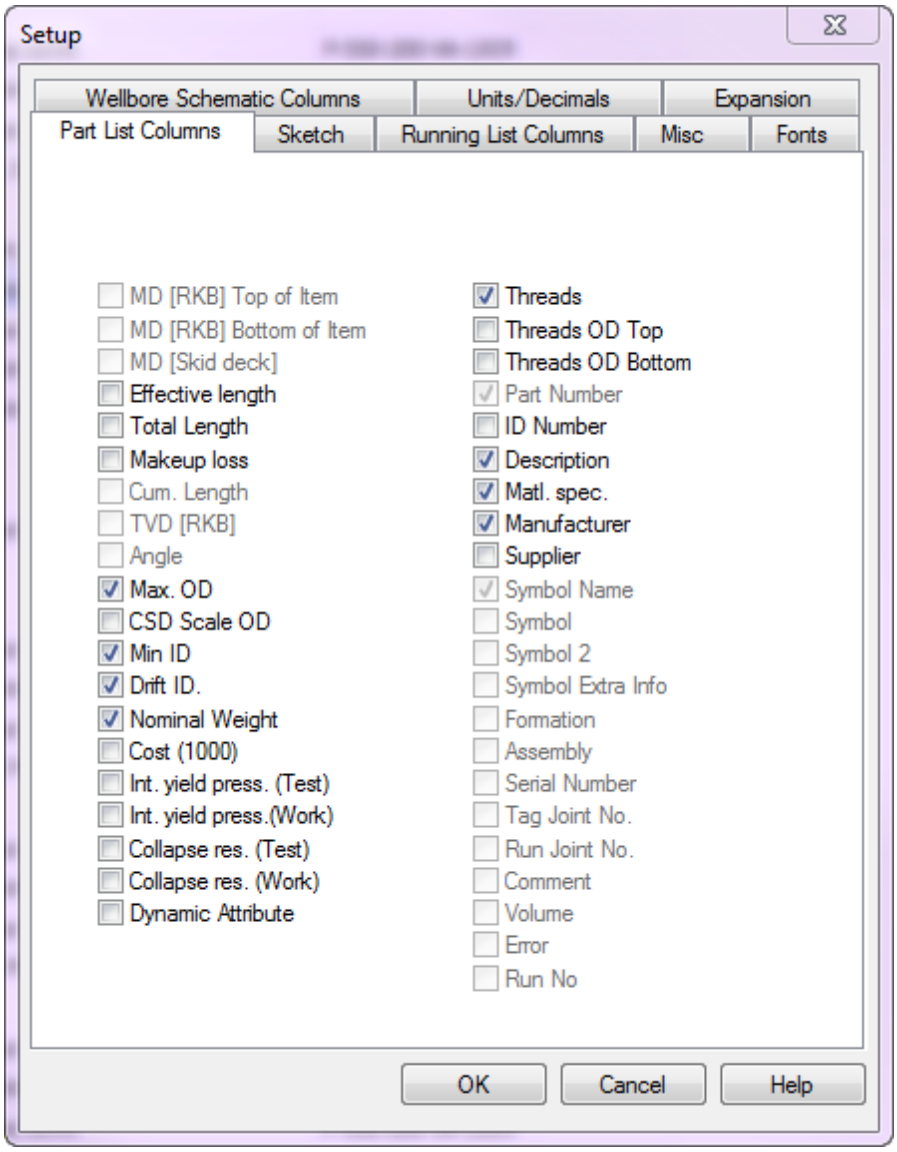


It is possible to change sort order if data is displayed in lists/tables. To do this, click the column you want to sort by. The first time the column is clicked, the list is sorted in ascending order, the next time the list is sorted in descending order.



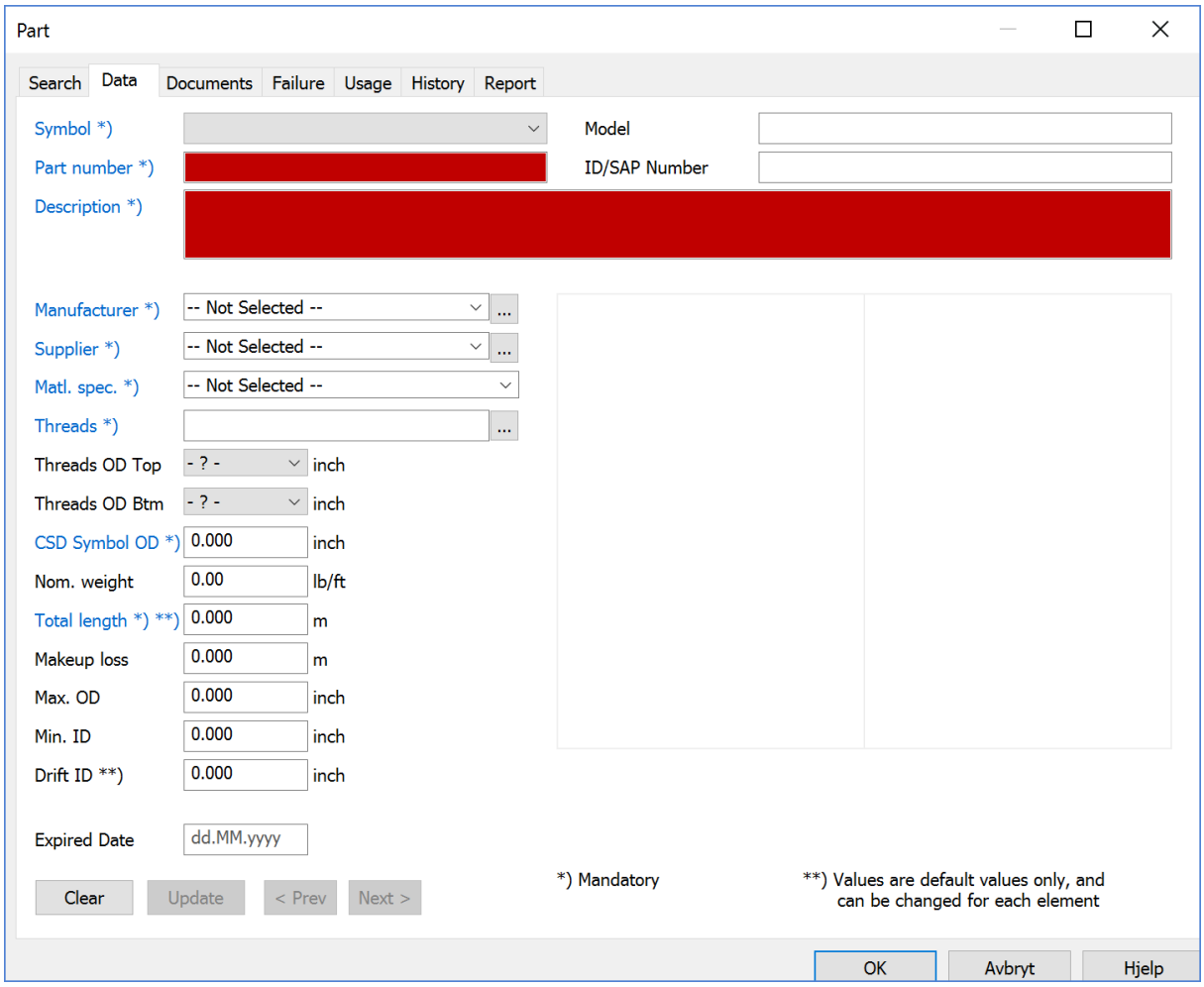
Setup...

The "Setup..." button in the Search tab will redirect you to the Setup dialog. In the Setup, under tab Part List Columns, you can choose what column to show in the Part List.



New

The New button will only be available for the System Administrator in CSD. Here you can create new parts and add this to the equipment database. By clicking this, you will be redirected to Data tab to create new part:



Mandatory fields are indicated with blue, starred headers.

CSD Scale OD is used to scale the symbol in CSD, and is important to secure a correct visual presentation in the Schematic.

There will be some logical checks on diameter. ID cannot be larger than OD etc.

NOTE: Each Part number have to be unique. CSD will show error message if duplicated.

Input	Description
Symbol	Drop down list with all available symbols in CSD.
Model	Model specification of the part.

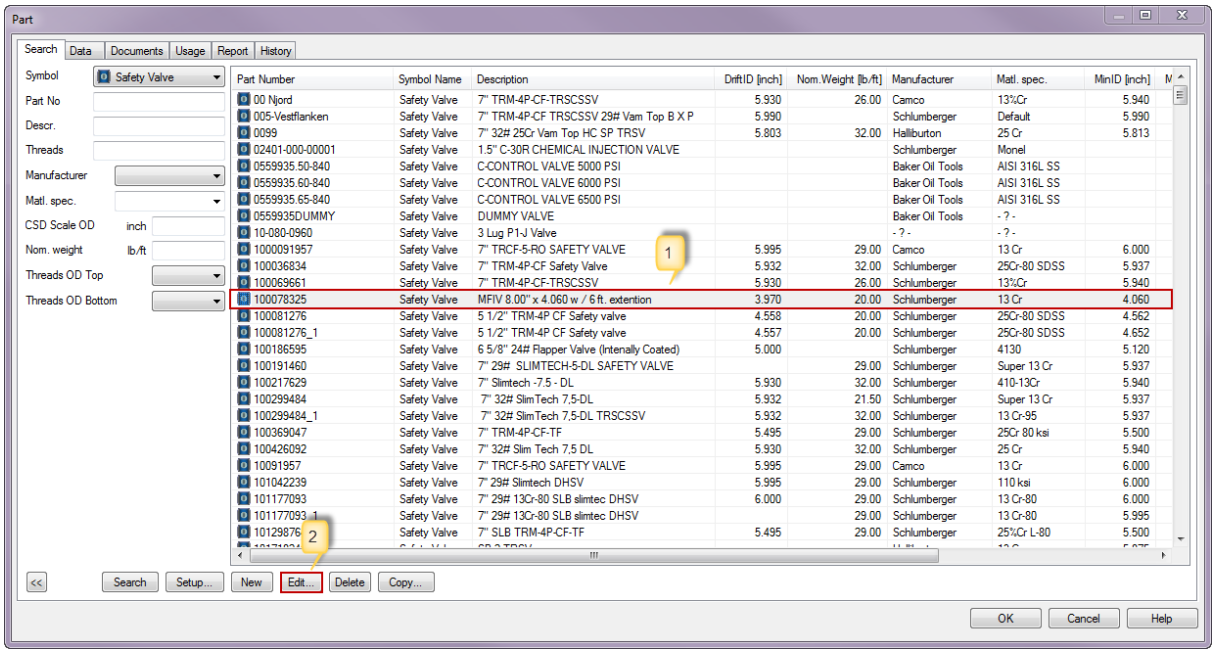
Part number	A unique part number for the part. Usually given in assembly drawings from the supplier.
ID/SAP Number	SAP number or company ID number.
Description	A short description of the part.
Manufacturer	Manufacturer of the part.
Supplier	Supplier of the part.
Matl. spec.	Material Specification.
Threads	Also known as coupling.
Threads OD Top	Outer diameter at top
Threads OD Bottom	Outer diameter at bottom
CSD Symbol OD	Choose a scaling OD for the part in Schematic. Usually the same as Threads OD Top (inch).
Nom. weight	Nominal weight to the part.
Total length	Total length of part.
Makeup loss	Loss of length due to coupling.
Max OD	The maximum outer diameter (OD).
Min ID	Inner diameter.
Drift ID	The inside diameter that manufacturer guarantees per specification.
Expired Date	Some parts has expiration date

Edit…

This button is disable for regular users. Superusers and admin have access to edit an existing part.

NOTE: A change to a part that are in use, will influence all completions where this part has been

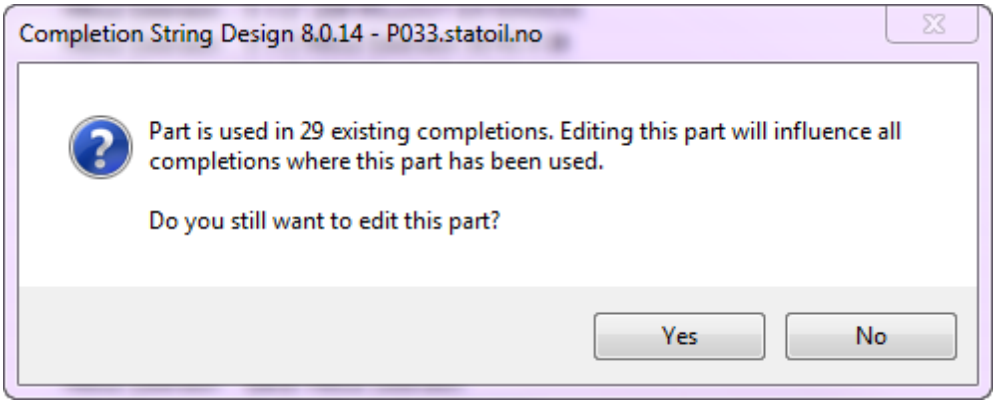
used.



1. Find current part which you wish to edit.

2. Mark this and choose edit.

3. If the part has been used in existing revision, a pop-up window will inform you in how many existing revision this part has been used. By choosing Yes, you will be able to continue to edit the part.



4. After editing the part, choose update to save the changes.

Delete

A part that has been used in a completion cannot be deleted until it has been removed from the completion. To find out where a Part Number has been used, go to tab Usage.

Note that only System Administrators have access to delete an existing part.

1. Find and highlight the wanted part.

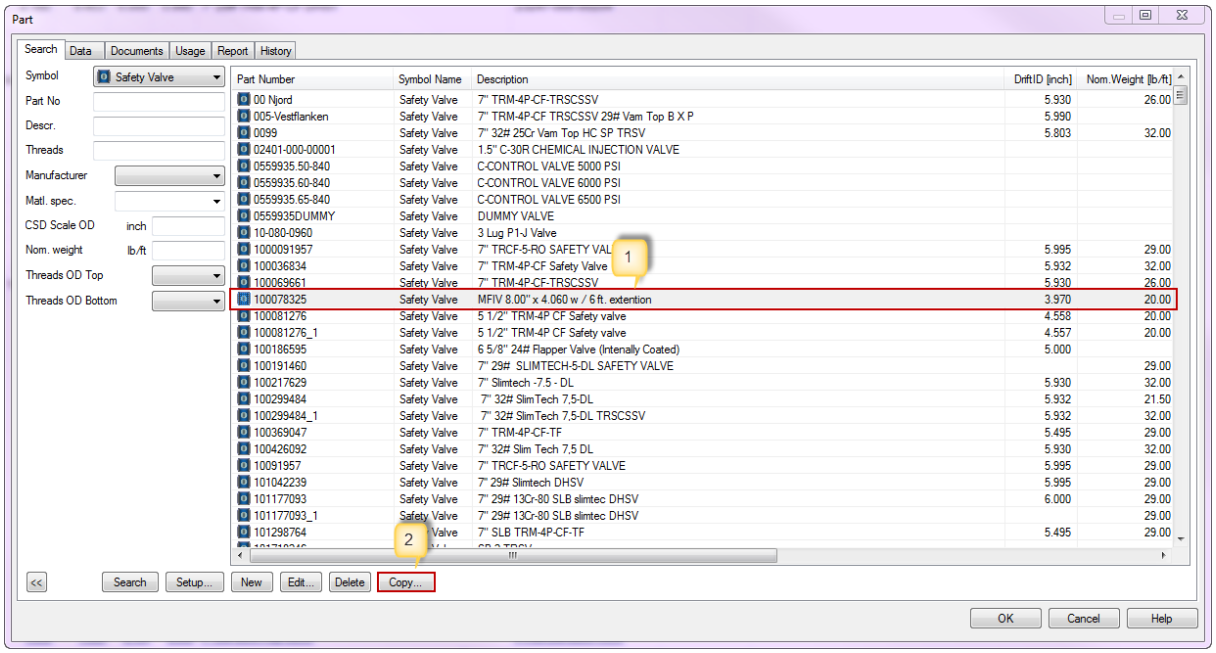
2. Choose Delete to delete current part.

Copy...

This function is used to create a new part by copying data of an existing part (except from the Part Number). Note that this function is only available for System Administrators.

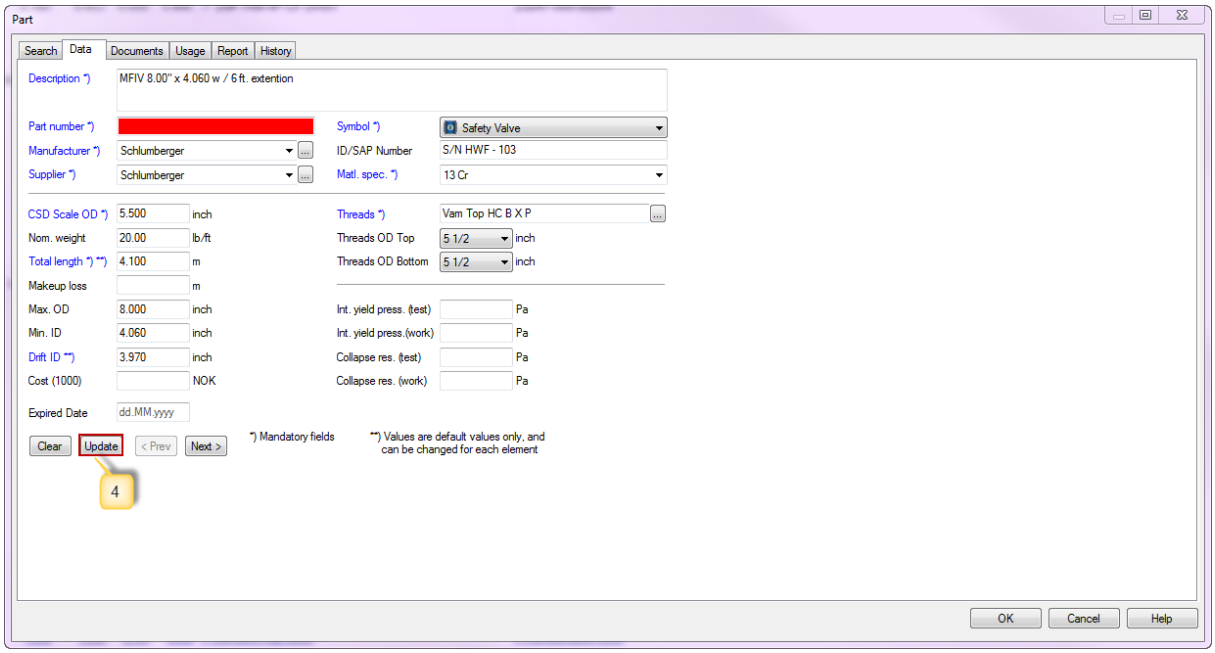
1. Find the existing part you wish to copy data from.

2. Highlight the part and choose Copy...



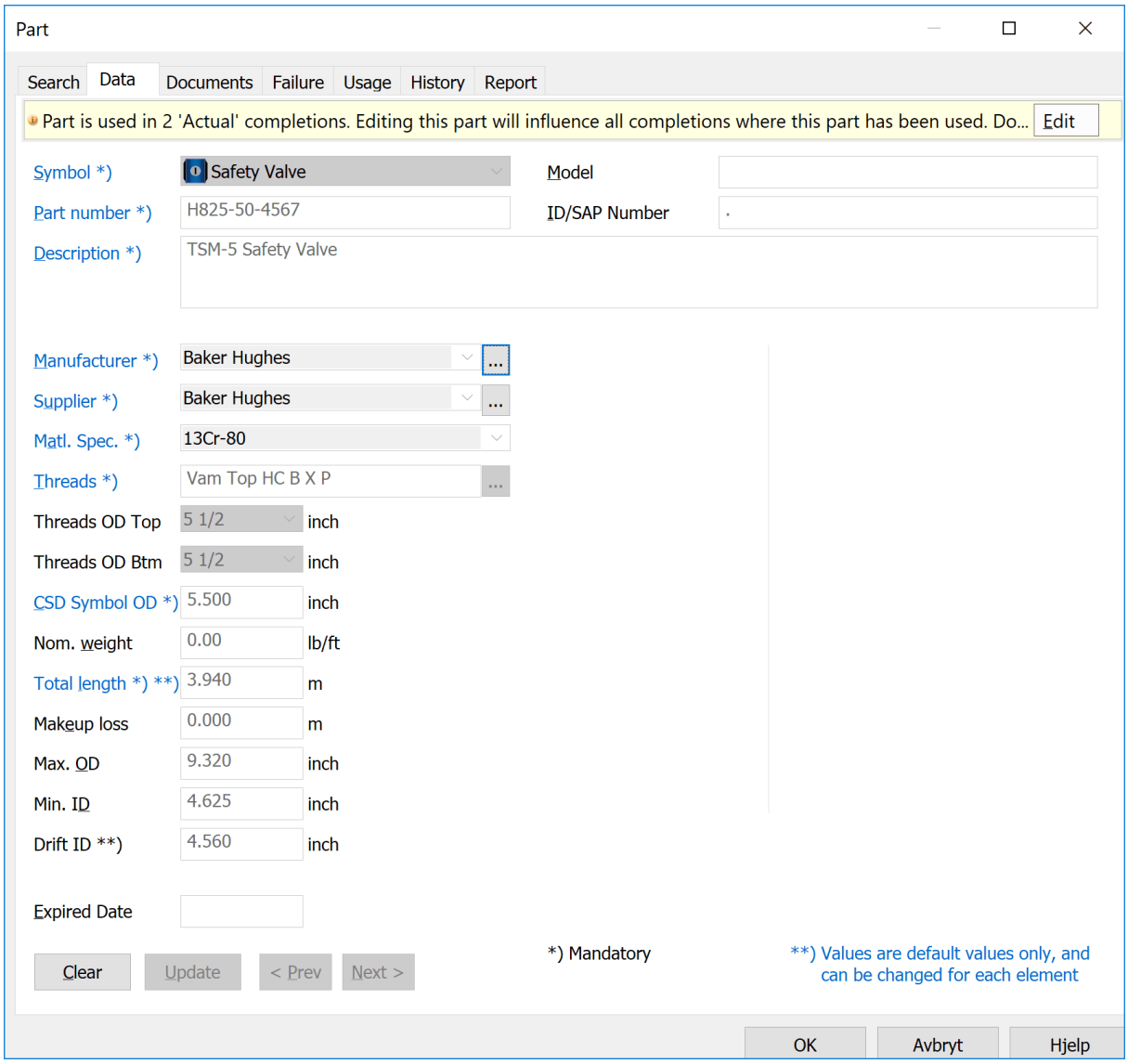
3. Edit the wanted data and enter Part Number for the new part.

4. Choose Update to save the new part.



1.9.2 Data

When finding the current part, highlight it and go to the Data tab. Here you can see data for the current part. System Administrators will have access to edit an existing part.



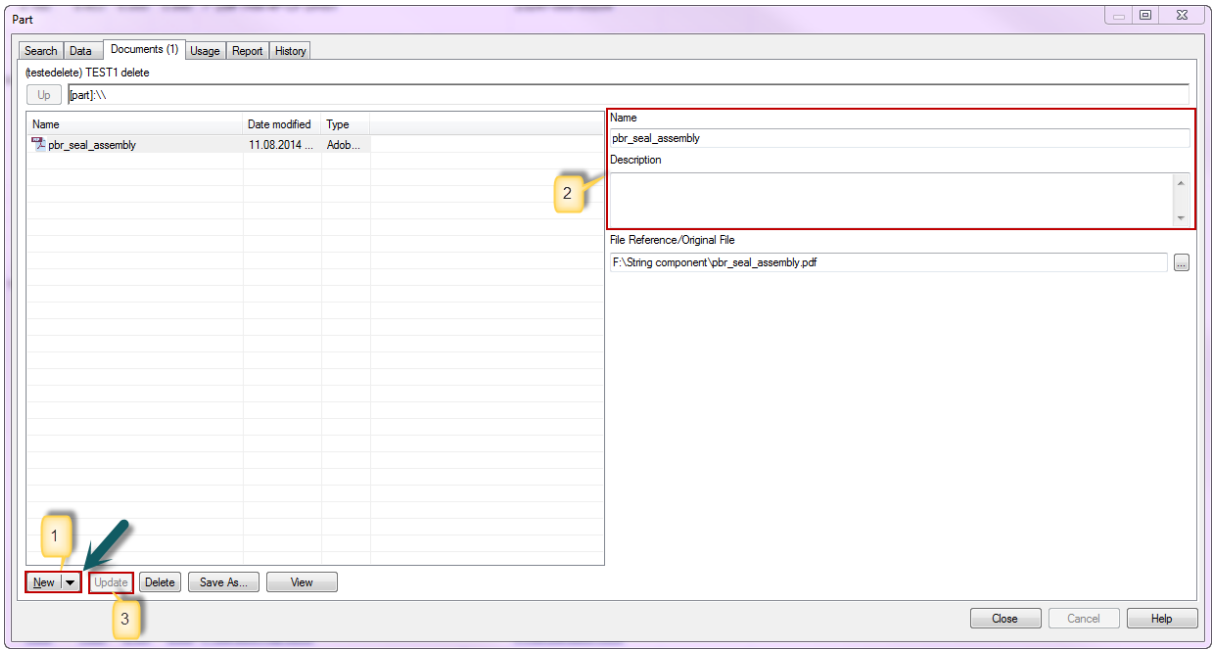
Input	Description
Description	A short description of the part
Part number	A unique part number for the part. Usually given in assembly drawings from the supplier
Symbol	Drop down list with all available symbols in CSD
Manufacturer	Manufacturer of the part
ID/SAP Number	Internal number

Supplier	Supplier of the part
Matl. spec.	Material Specification
CSD Scale OD	Choose a scaling OD for part. Usually the same as Threads OD Top (inch)
Nom. weight	Nominal weight to the part
Total length	Total length of part
Makeup loss	Loss of length due to coupling
Max OD	The maximum outer diameter (OD)
Min ID	Inner diameter
Drift ID	The inside diameter that manufacturer guarantees per specification
Expired Date	Some parts has expiration date.
Threads	Also known as coupling.
Threads OD Top	Outer diameter at top
Threads OD Bottom	Outer diameter at bottom

1.9.3 Documents

All documents attached to a part is located in the Documents tab. Remember to first choose a part in the Search tab.

Only the **System Administrators** will have access to remove/add new documents/link, while regular users will have access to read/open and save them.



1. Drag and drop the document into the list, or click on the small arrow to choose between create New Folder, insert Document from File or insert Link.

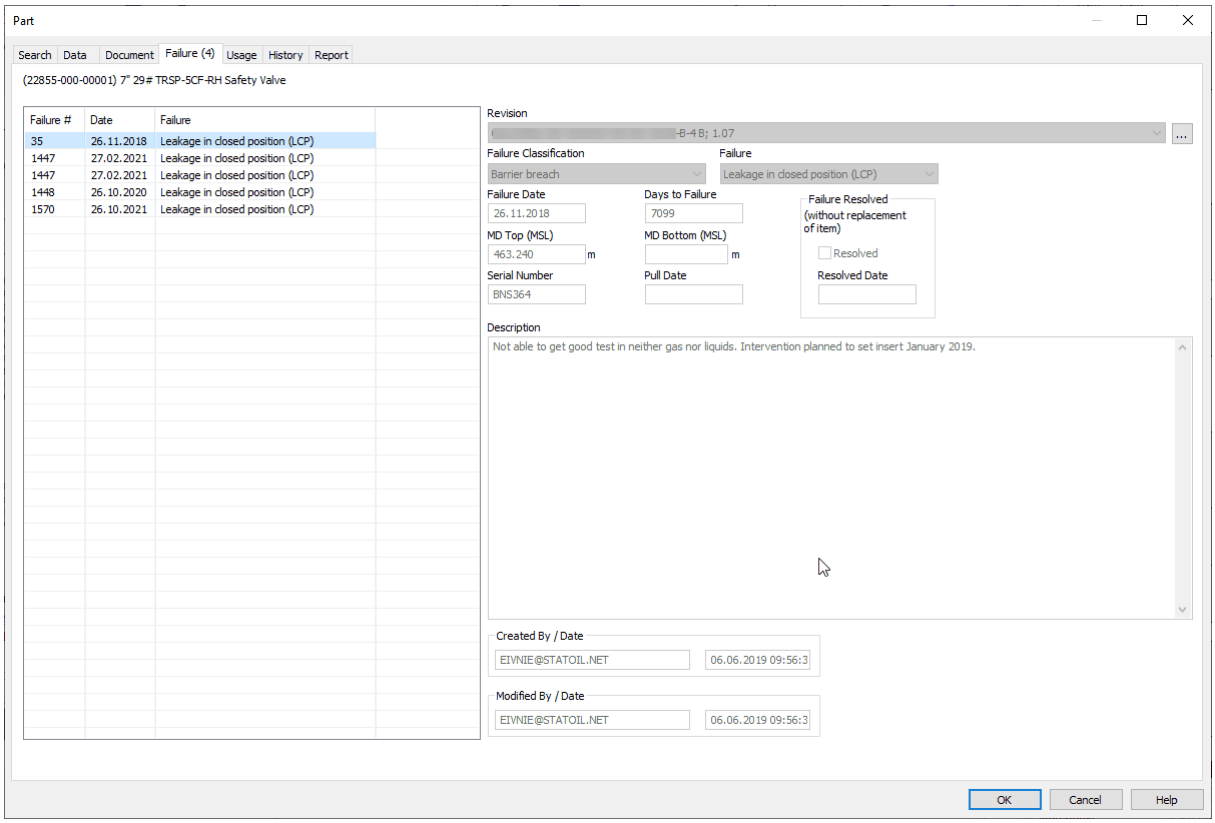
2. Enter name and description for the document.

3. Push Update.

Tip! Organize your documents in folders for a better overview.

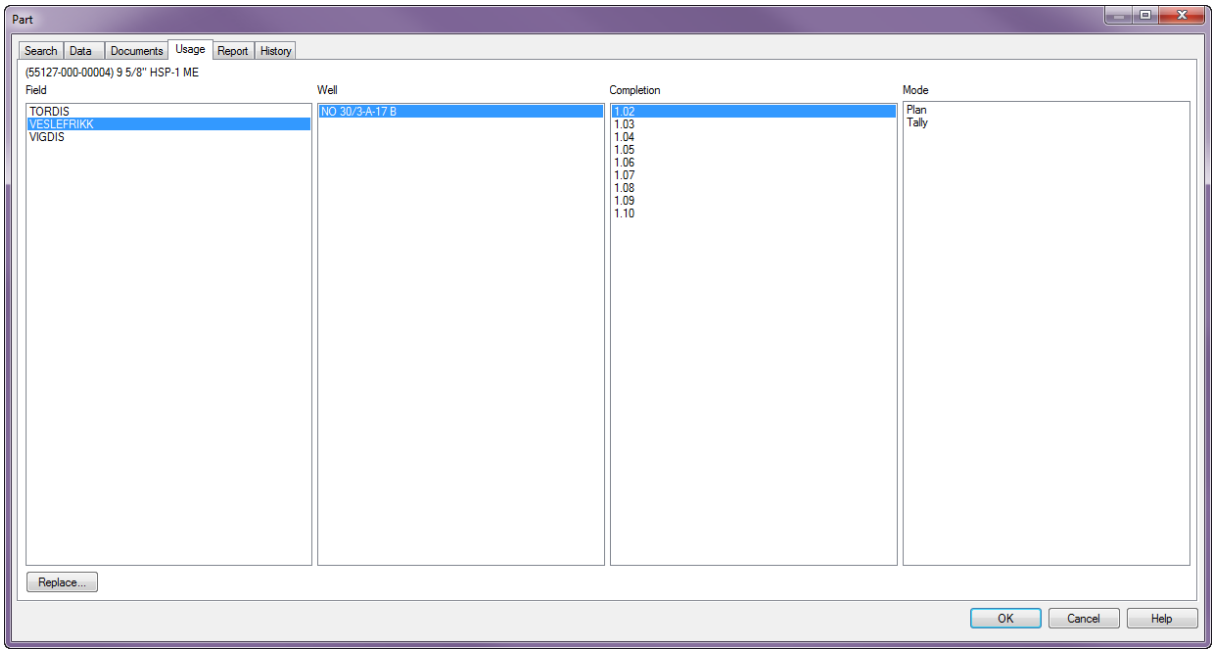
1.9.4 Failure

If failures are registered on the current part, it will show as a non editable list in the Failure tab:



1.9.5 Usage

In the Field column you will find all Fields where the selected part is being used. If you need more information, you can click one of the fields in the Field-window. Choose the well name to see in what completion the part is used. Choose completion to see in what mode the part is used. In the Mode column, you can double-click a mode to open the completion drawing.



NOTE: Remember to first select the part in the Search tab.

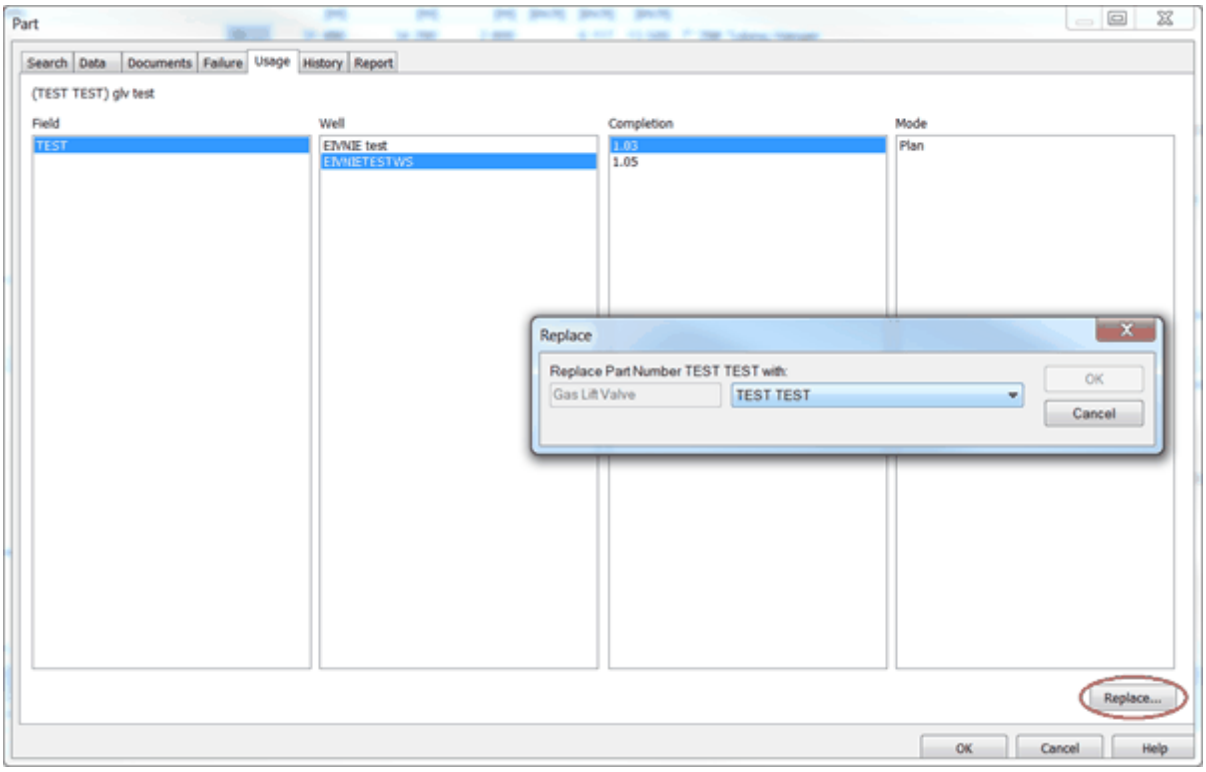
Replace...

Admin also have access to replace a certain part/component in **all modes within a revision**.

In the Usage tab in the Part dialog it is possible to replace all occurrences of a selected part number with another selected part number within revisions. Simply search for the part number you want to replace in the Search tab, highlight it and go to the usage tab.

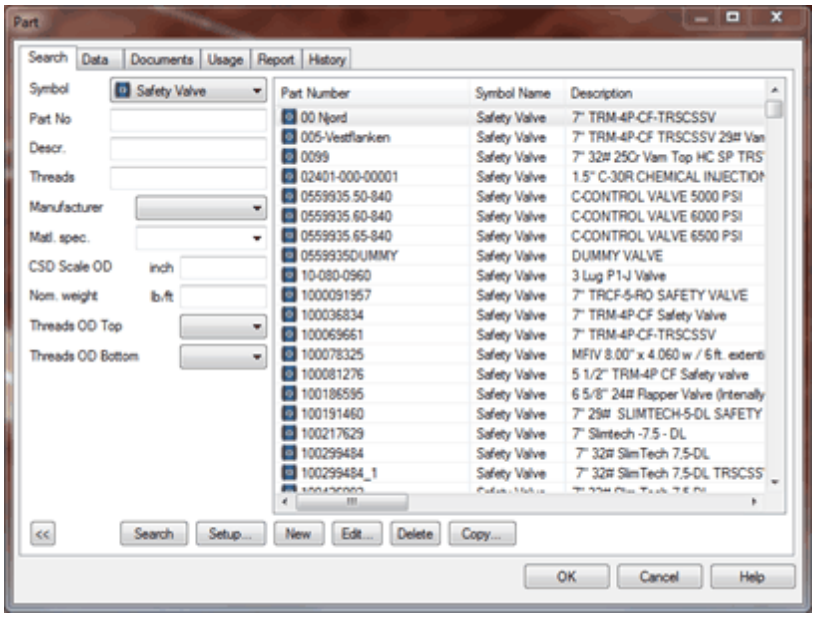
Select Field, well and the completion where you want the part replaced, and click on the Replace-button. In the window that pops up you choose the part number you wish to replace it with in the drop down list. The press OK. CSD then gives you the number of records that will be changed and asks if you want to continue. Press OK to replace.

To replace all instances of a part found in completion revision 1.03, all modes (I.e. Plan, Tally, Existing):

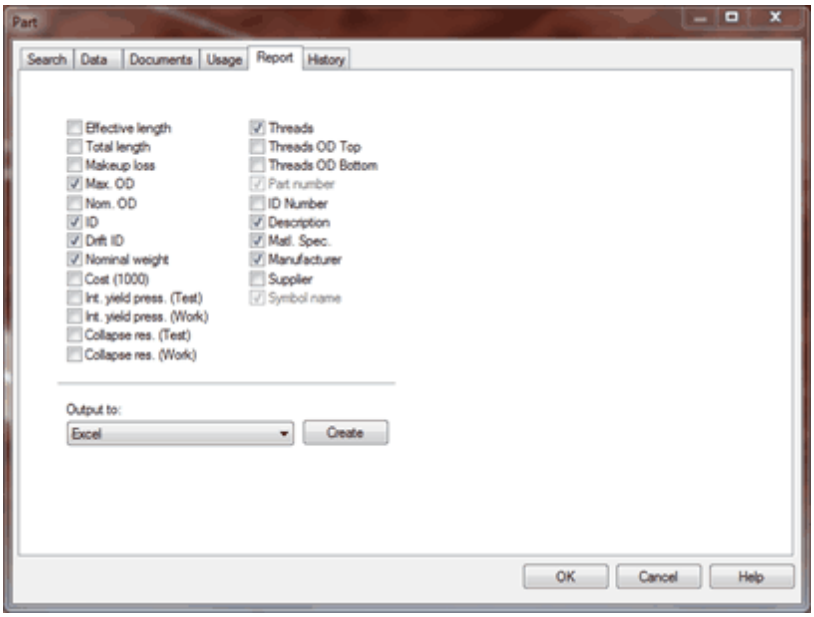


1.9.6 Report

Use the Equipment Database Report to generate a report of the equipment in the database. You can choose whether you want a report for the entire database, for a specific symbol, Part No, description, threads, manufacturer, material specification CSD Scale OD, Nominal weight, Threads OD Top or Threads OD Bottom.



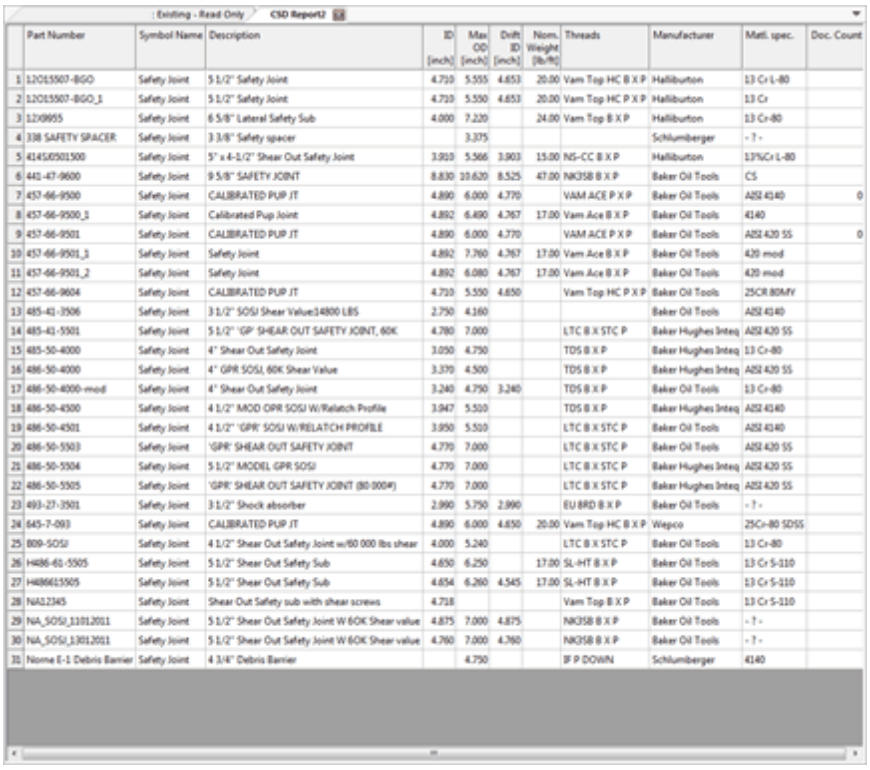
1. Choose Database,Parts . The search database for part will open. Parts. If needed add a filter for your search, and choose the Report tab (see figure above).



2. Choose which columns you want to display, and if needed set filters for your search.

3. Choose optional Output to and press Create.

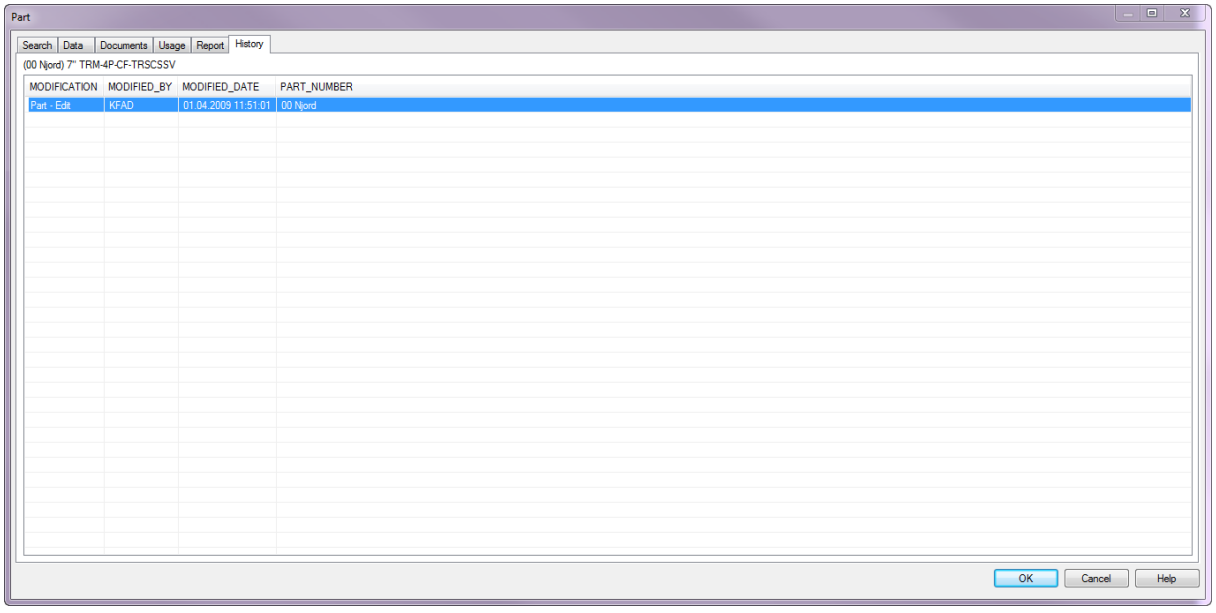
If you choose to send the report to a window inside the CSD-application, the data is presented as a spread sheet. When the report is generated, you get a new menu item: Report. Choose Report, Adjust Column Widths to adjust the width of the columns.



	Part Number	Symbol Name	Description	ID [inch]	Max OD [inch]	Drift ID [inch]	Nom. Weight [lb/ft]	Threads	Manufacturer	Matl. spec.	Doc. Count
1	12015507-BGO	Safety Joint	5 1/2" Safety Joint	4.710	5.555	4.653	20.00	Vam Top HC B X P	Halliburton	13 Cr L-80	
2	12015507-BGO_1	Safety Joint	5 1/2" Safety Joint	4.710	5.550	4.653	20.00	Vam Top HC P X P	Halliburton	13 Cr	
3	12X9955	Safety Joint	6 5/8" Lateral Safety Sub	4.000	7.220		24.00	Vam Top B X P	Halliburton	13 Cr-80	
4	338 SAFETY SPACER	Safety Joint	3 3/8" Safety spacer		3.375				Schlumberger	- ? -	
5	4145/0501500	Safety Joint	5" x 4-1/2" Shear Out Safety Joint	3.910	5.566	3.903	15.00	NS-CC B X P	Halliburton	13%Cr L-80	
6	441-47-9600	Safety Joint	9 5/8" SAFETY JOINT	8.830	10.620	8.525	47.00	NK3SB B X P	Baker Oil Tools	CS	
7	457-66-9500	Safety Joint	CALIBRATED PUP JT	4.890	6.000	4.770		VAM ACE P X P	Baker Oil Tools	AISI 4140	0
8	457-66-9500_1	Safety Joint	Calibrated Pup Joint	4.892	6.490	4.767	17.00	Vam Ace B X P	Baker Oil Tools	4140	
9	457-66-9501	Safety Joint	CALIBRATED PUP JT	4.890	6.000	4.770		VAM ACE P X P	Baker Oil Tools	AISI 420 SS	0
10	457-66-9501_1	Safety Joint	Safety Joint	4.892	7.760	4.767	17.00	Vam Ace B X P	Baker Oil Tools	420 mod	
11	457-66-9501_2	Safety Joint	Safety Joint	4.892	6.080	4.767	17.00	Vam Ace B X P	Baker Oil Tools	420 mod	
12	457-66-9604	Safety Joint	CALIBRATED PUP JT	4.710	5.550	4.650		Vam Top HC P X P	Baker Oil Tools	25CR 80MY	
13	485-41-3506	Safety Joint	3 1/2" SOSJ Shear Value:14800 LBS	2.750	4.160				Baker Oil Tools	AISI 4140	
14	485-41-5501	Safety Joint	5 1/2" 'GP' SHEAR OUT SAFETY JOINT, 60K	4.780	7.000			LTC B X STC P	Baker Hughes Inteq	AISI 420 SS	
15	485-50-4000	Safety Joint	4" Shear Out Safety Joint	3.050	4.750			TDS B X P	Baker Hughes Inteq	13 Cr-80	
16	486-50-4000	Safety Joint	4" GPR SOSJ, 60K Shear Value	3.370	4.500			TDS B X P	Baker Hughes Inteq	AISI 420 SS	
17	486-50-4000-mod	Safety Joint	4" Shear Out Safety Joint	3.240	4.750	3.240		TDS B X P	Baker Oil Tools	13 Cr-80	
18	486-50-4500	Safety Joint	4 1/2" MOD OPR SOSJ W/Relatch Profile	3.947	5.510			TDS B X P	Baker Hughes Inteq	AISI 4140	
19	486-50-4501	Safety Joint	4 1/2" 'GPR' SOSJ W/RELATCH PROFILE	3.950	5.510			LTC B X STC P	Baker Oil Tools	AISI 4140	
20	486-50-5503	Safety Joint	'GPR' SHEAR OUT SAFETY JOINT	4.770	7.000			LTC B X STC P	Baker Oil Tools	AISI 420 SS	
21	486-50-5504	Safety Joint	5 1/2" MODEL GPR SOSJ	4.770	7.000			LTC B X STC P	Baker Hughes Inteq	AISI 420 SS	
22	486-50-5505	Safety Joint	'GPR' SHEAR OUT SAFETY JOINT (80 000#)	4.770	7.000			LTC B X STC P	Baker Hughes Inteq	AISI 420 SS	
23	493-27-3501	Safety Joint	3 1/2" Shock absorber	2.990	5.750	2.990		EU BRD B X P	Baker Oil Tools	- ? -	
24	645-7-093	Safety Joint	CALIBRATED PUP JT	4.890	6.000	4.650	20.00	Vam Top HC B X P	Wepco	25Cr-80 SDSS	
25	809-SOSJ	Safety Joint	4 1/2" Shear Out Safety Joint w/60 000 lbs shear	4.000	5.240			LTC B X STC P	Baker Oil Tools	13 Cr-80	
26	H486-61-5505	Safety Joint	5 1/2" Shear Out Safety Sub	4.650	6.250		17.00	SL-HT B X P	Baker Oil Tools	13 Cr S-110	
27	H486615505	Safety Joint	5 1/2" Shear Out Safety Sub	4.654	6.260	4.545	17.00	SL-HT B X P	Baker Oil Tools	13 Cr S-110	
28	NA12345	Safety Joint	Shear Out Safety sub with shear screws	4.718				Vam Top B X P	Baker Oil Tools	13 Cr S-110	
29	NA_SOSJ_11012011	Safety Joint	5 1/2" Shear Out Safety Joint W 60K Shear value	4.875	7.000	4.875		NK3SB B X P	Baker Oil Tools	- ? -	
30	NA_SOSJ_13012011	Safety Joint	5 1/2" Shear Out Safety Joint W 60K Shear value	4.760	7.000	4.760		NK3SB B X P	Baker Oil Tools	- ? -	
31	Norne E-1 Debris Barrier	Safety Joint	4 3/4" Debris Barrier		4.750			IF P DOWN	Schlumberger	4140	

1.9.7 History

The History tab shows who has created and edited the part, and the modification date



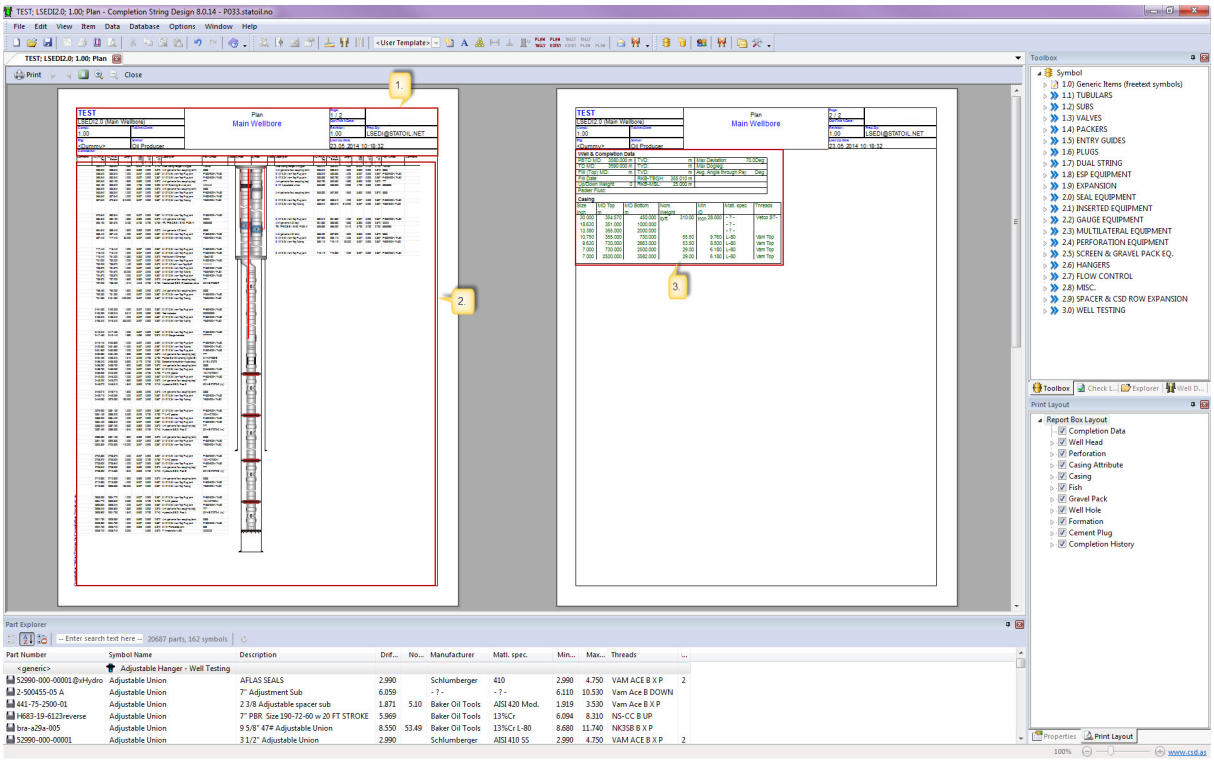
Tip! Remember to first highlight and choose part in the Search tab.

1.10 Print

It is possible to print out the different completions. To print out the schematic you must first open the completion.

The print out have three main elements:

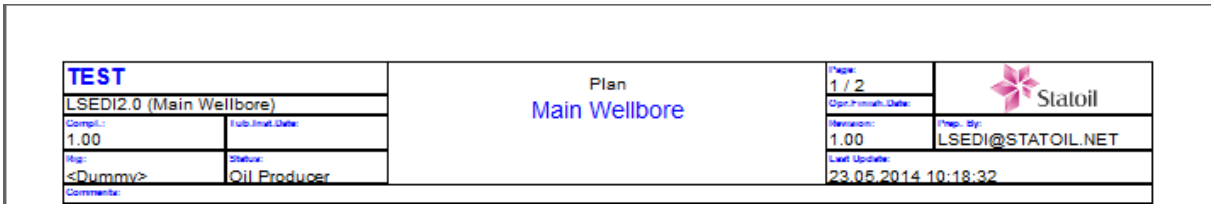
1. Heading.
2. Schematic.
3. Data boxes.



1.10.1 Heading

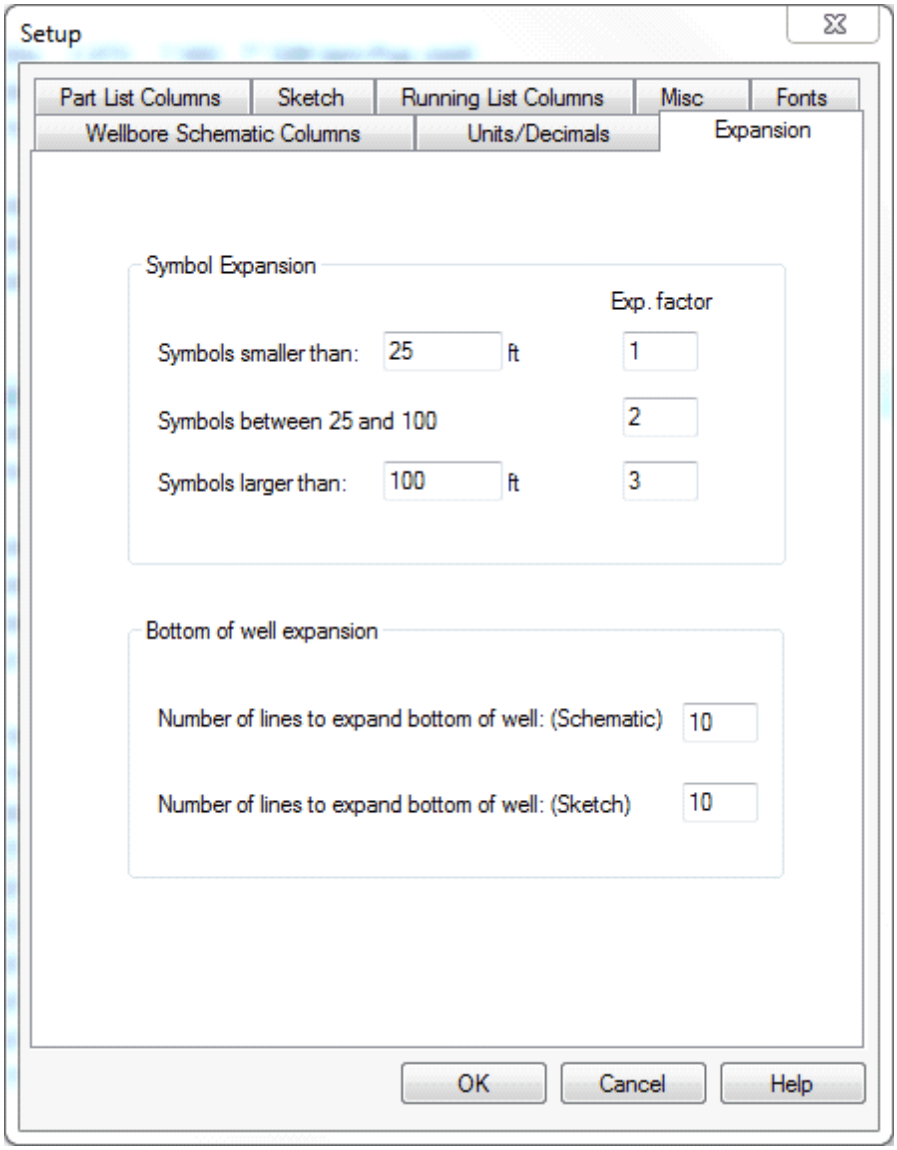
The heading contains information such as well number, revision number, field, status (oil producer, gas injector and so on). Most of these data are entered in Data, Well & Completion Data. The content of information in the heading can be personalized for each company. For custom report headers, please contact the CSD system responsible.

Example on heading setup for reports:



1.10.2 Schematic Setup

The completion schematic consists of symbols and belonging data. The look of this schematic can be manipulated in a number of ways. Here are a few examples:



- Fonts and font sizes can be changed in Option, Setup, and Fonts. If you want to change the fonts used in Schematic, you should make changes to the entry Completion Components. Note that there are separate settings for fonts regarding inserted equipment, Symbol Extra column etc.

- The length of the last part of the well (area between the last element and TD) can be changed. This is done in Option, Setup in the tab Expansion. Number of lines to expand bottom of well can vary from 1 to 100 rows. (5 rows are default).

- The length of the tubing elements can be changed by changing the expansion factor,

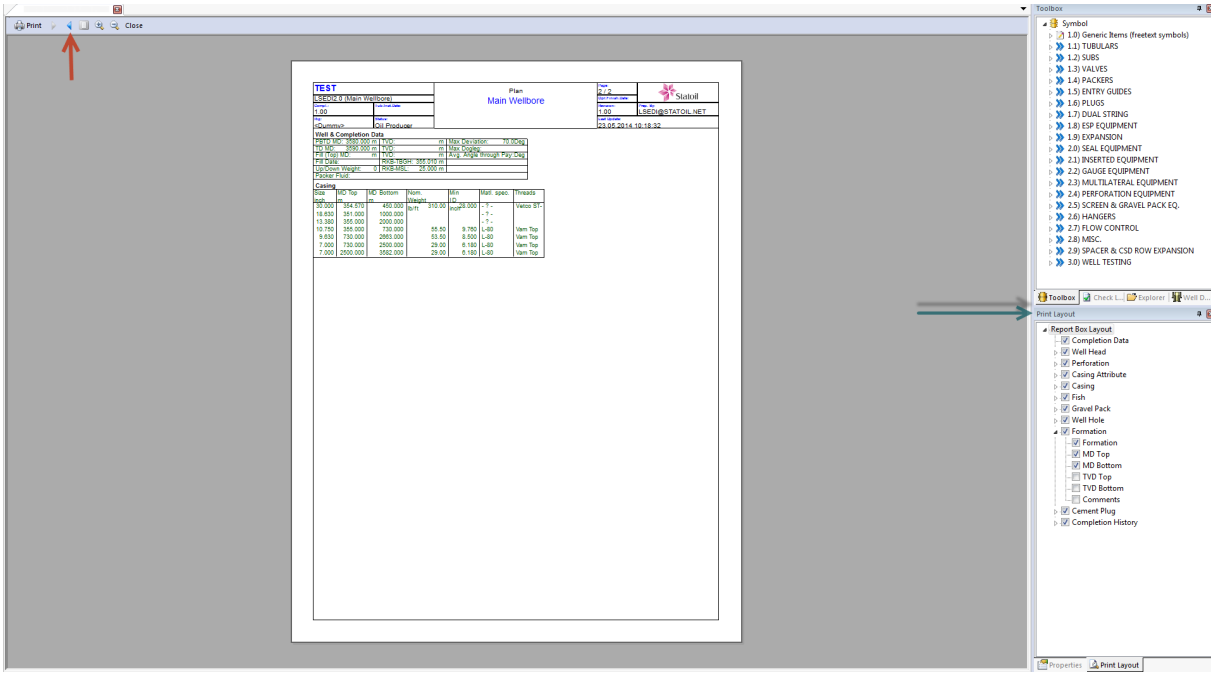
also in Option, Setup, Expansion.

- The Symbol column in the Schematic view is scalable. Move the cursor to the column border, push down the left-hand mouse button and drag to broaden or narrow.

1.10.3 Data boxes

Print Layout is used to select which data boxes to be included in the report. The data boxes contain data related to perforations, fish/junk, casings, cement etc.

Go to Print Preview (File, Print Preview). The Print Layout dialog at the lower right, allows you to choose which data boxes to display at the last page in the report. If you for instance want information about fish/junk in your report; select Fish in the Print Layout hierarchy. This box will automatically be shown in the Report Layout screen. The red arrow indicate to view the next page of the print.



The font size in the data boxes can be changed in Option, Setup, Fonts and Report Box.

The headers and the watermark is customizable. If needed; please contact the System Administrator to adjust this for your company.

1.11 Reports

CSD comes with several standard report such as:

- Equipment Database Report.
- Threads report.

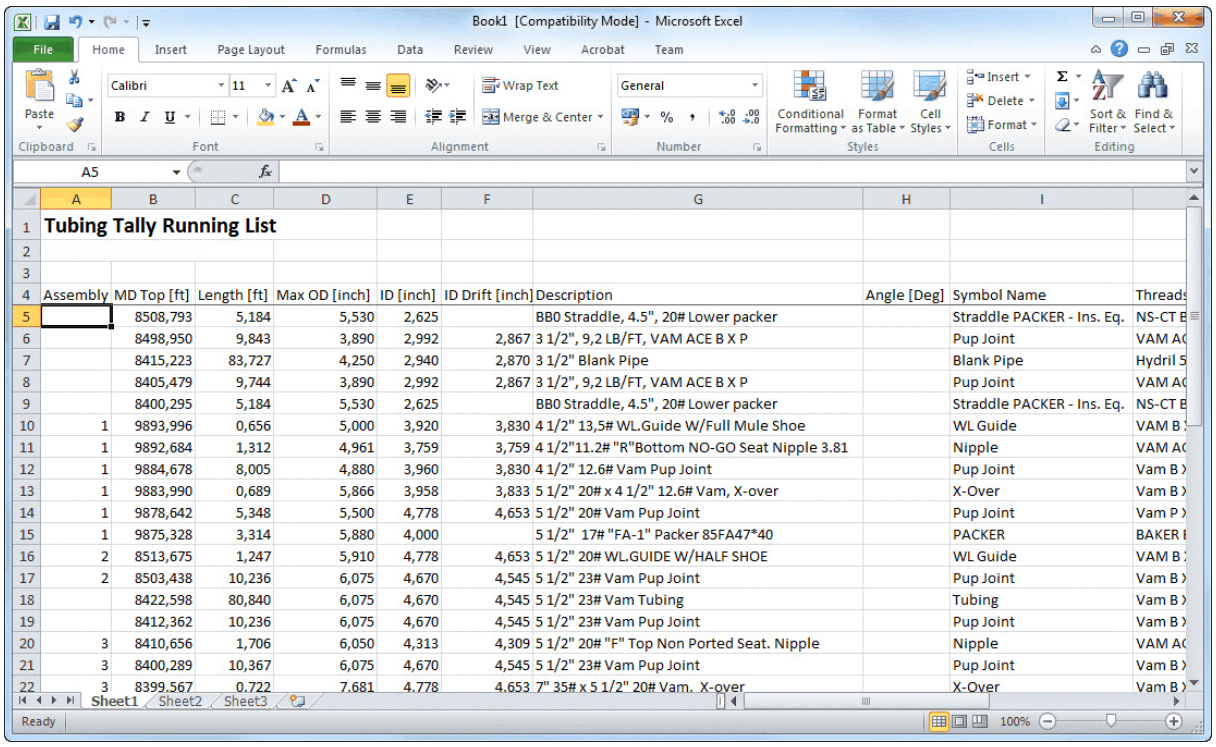
- Excel and other special reports.

1.11.1 Tubing Tally Running List

Tubing Tally Running List is as the name indicates a running list. The elements are in the opposite order compared to the schematic (last element is first in the running list).

1. Choose Option, Setup and tab Running List Columns to select which columns you want displayed in the report. Press OK.
2. Choose Data, Tubing Tally Running List.
3. The report will be generated in Microsoft Excel.

Example Tubing Tally Running List:



Book1 [Compatibility Mode] - Microsoft Excel

Tubing Tally Running List

Assembly	MD Top [ft]	Length [ft]	Max OD [inch]	ID [inch]	ID Drift [inch]	Description	Angle [Deg]	Symbol Name	Threads
	8508,793	5,184	5,530	2,625		BB0 Straddle, 4.5", 20# Lower packer		Straddle PACKER - Ins. Eq.	NS-CT E
	8498,950	9,843	3,890	2,992	2,867	3 1/2", 9,2 LB/FT, VAM ACE B X P		Pup Joint	VAM AC
	8415,223	83,727	4,250	2,940	2,870	3 1/2" Blank Pipe		Blank Pipe	Hydril 5
	8405,479	9,744	3,890	2,992	2,867	3 1/2", 9,2 LB/FT, VAM ACE B X P		Pup Joint	VAM AC
	8400,295	5,184	5,530	2,625		BB0 Straddle, 4.5", 20# Lower packer		Straddle PACKER - Ins. Eq.	NS-CT E
1	9893,996	0,656	5,000	3,920	3,830	4 1/2" 13,5# WL.Guide W/Full Mule Shoe		WL Guide	VAM B
1	9892,684	1,312	4,961	3,759	3,759	4 1/2"11.2# "R"Bottom NO-GO Seat Nipple 3.81		Nipple	VAM AC
1	9884,678	8,005	4,880	3,960	3,830	4 1/2" 12.6# Vam Pup Joint		Pup Joint	Vam B X
1	9883,990	0,689	5,866	3,958	3,833	5 1/2" 20# x 4 1/2" 12.6# Vam, X-over		X-Over	Vam B X
1	9878,642	5,348	5,500	4,778	4,653	5 1/2" 20# Vam Pup Joint		Pup Joint	Vam P X
1	9875,328	3,314	5,880	4,000		5 1/2" 17# "FA-1" Packer 85FA47*40		PACKER	BAKER E
2	8513,675	1,247	5,910	4,778	4,653	5 1/2" 20# WL.GUIDE W/HALF SHOE		WL Guide	VAM B
2	8503,438	10,236	6,075	4,670	4,545	5 1/2" 23# Vam Pup Joint		Pup Joint	Vam B X
	8422,598	80,840	6,075	4,670	4,545	5 1/2" 23# Vam Tubing		Tubing	Vam B X
	8412,362	10,236	6,075	4,670	4,545	5 1/2" 23# Vam Pup Joint		Pup Joint	Vam B X
3	8410,656	1,706	6,050	4,313	4,309	5 1/2" 20# "F" Top Non Ported Seat. Nipple		Nipple	VAM AC
3	8400,289	10,367	6,075	4,670	4,545	5 1/2" 23# Vam Pup Joint		Pup Joint	Vam B X
3	8399,567	0,722	7,681	4,778	4,653	7" 35# x 5 1/2" 20# Vam, X-over		X-Over	Vam B X

1.11.2 Threads Report

The threads reports checks thread type combination, Threads OD and Box/Pin configuration.

1. Choose Data and Threads Report.

2. The report will then be generated. The report will tell you where the error has occurred and what's wrong.

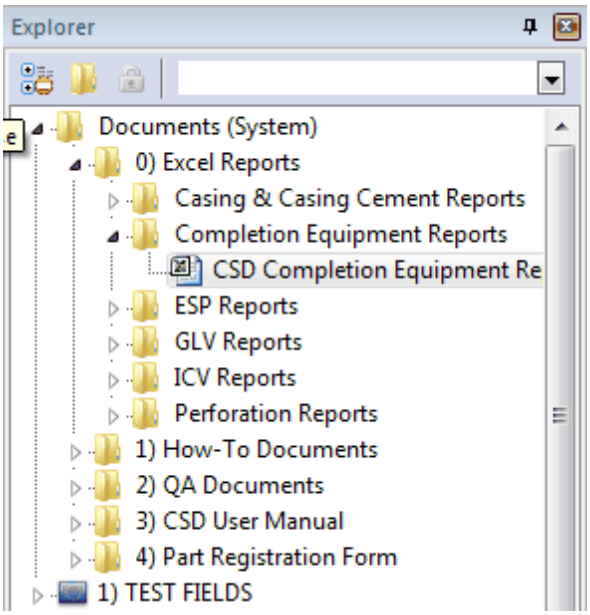
TEST; LSEDI; 2.00; Plan | CSD Report1

Wellbore	Symbol	Part Number	MD Top	Threads	Error
NO 6507/7-A-3 T2	Pup Joint - generic item		3127.334	Vam Top B X P	box/pin.
NO 6507/7-A-3 T2	Pup Joint - generic item		3129.894	Vam Top P X P	box/pin.
NO 6507/7-A-3 T2	SPM	H981-10-0026	3131.464	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Pup Joint - generic item		3133.824	Vam Top B X P	box/pin.
NO 6507/7-A-3 T2	Flow Coupling	H819-20-0012 FDCW	3158.164	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Pup Joint - generic item		3160.024	Vam Top B X P	box/pin.
NO 6507/7-A-3 T2	Pup Joint - generic item		3179.934	Vam Top B X P	threads type, OD, box/pin.
NO 6507/7-A-3 T2	Safety Valve	H734-91-0003 A84	3182.514		threads type, OD, box/pin.
NO 6507/7-A-3 T2	Safety Valve	H734-91-0003 A84	3182.514		threads type, OD, box/pin.
NO 6507/7-A-3 T2	Tubing Hanger	H790-86-0004 A84	3186.714	Vam Top B X P	threads type, OD, box/pin.
NO 6507/7-A-3 T2	Pup Joint - generic item		7189.602	Vam Top B X P	threads type.
NO 6507/7-A-3 T2	Pup Joint - generic item		7192.612	Vam Top HC B X P	threads type.
NO 6507/7-A-3 T2	Collar - generic item		7221.823	Vam Top HC B X B	threads type.
NO 6507/7-A-3 T2	Swivel joint	SJ-D-5520-02-A_2	7222.103	Vam Top P X Fast Cone P	threads type.
NO 6507/7-A-3 T2	Swivel joint	SJ-D-5520-02-B	7222.553	Fast Cone B X Vam Top P	threads type.
NO 6507/7-A-3 T2	Pup Joint - generic item		7223.078	Vam Top HC B X P	threads type.
NO 6507/7-A-3 T2	Collar - generic item		7495.127	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Gauge Carrier	15646	7495.307	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Gauge Carrier	15646	7495.307	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Splice Sub	235SF0703542-SB2	7496.557	Vam Top B X P	box/pin.
NO 6507/7-A-3 T2	Collar - generic item		7500.197	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Swivel joint	SJ-D-3510-05-A	7500.377	Vam Top B X Fast Cone P	box/pin.
NO 6507/7-A-3 T2	Collar - generic item		7561.895	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Gauge Carrier	15646_1	7562.075	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Gauge Carrier	15646_1	7562.075	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Splice Sub	235SF0703542-SB2	7563.320	Vam Top B X P	box/pin.
NO 6507/7-A-3 T2	Collar - generic item		7567.030	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Swivel joint	SJ-D-3510-05-A_1	7567.210	Vam Top B X Fast Cone P	box/pin.
NO 6507/7-A-3 T2	Collar - generic item		7617.583	Vam Top B X B	box/pin.
NO 6507/7-A-3 T2	Gauge Carrier	15646	7617.773	Vam Top B X B	box/pin.

Note: One of the elements in the Checklist, should be to go through the thread report.

1.11.3 Excel and Special Reports

CSD comes with some standard Excel reports and can be set up with custom reports for each company. The reports are organized in folders in the System Documents section in Explorer. Please contact the CSD System Administrator to add custom reports.

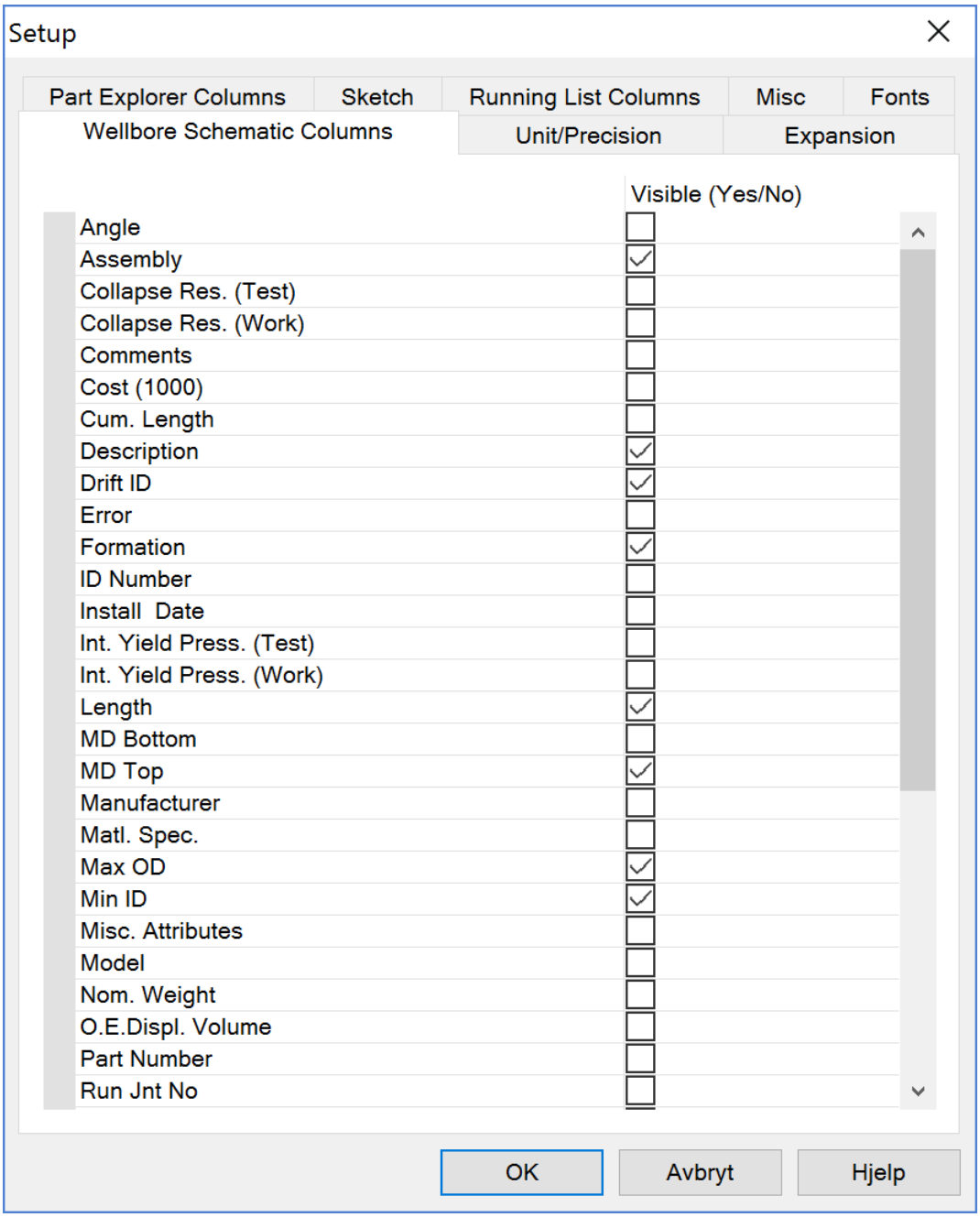


1.12 Setup

Your personal setup is saved when you close CSD. This setup includes all parameters that are chosen in Option, Setup.

1.12.1 Wellbore Schematic Columns

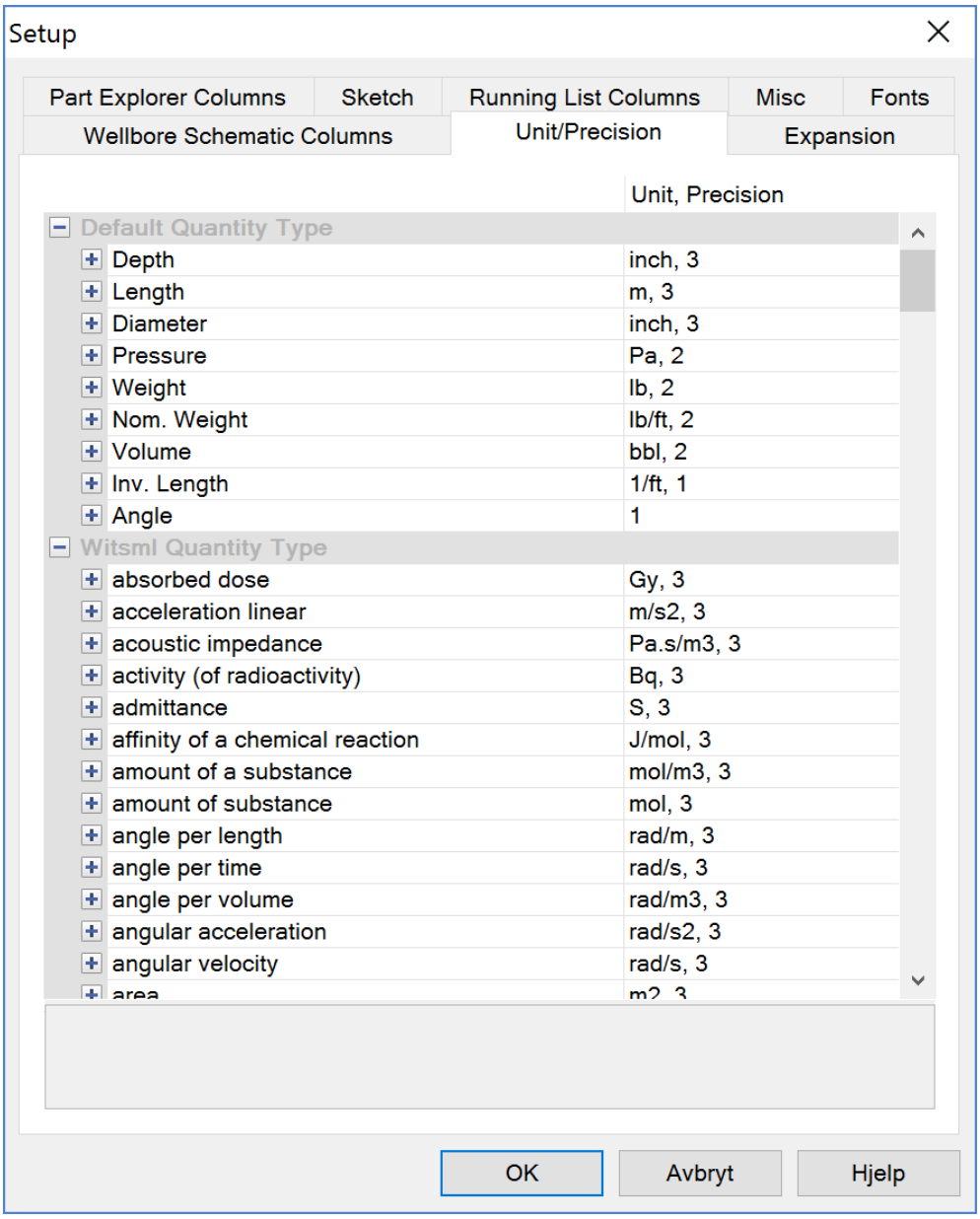
You can choose which columns to display in the Schematic window in Option, Setup and Wellbore Schematic Columns tab or by pressing in the toolbar.



NOTE: This setup also represents the columns showing in the printout.

1.12.2 Units/Precision

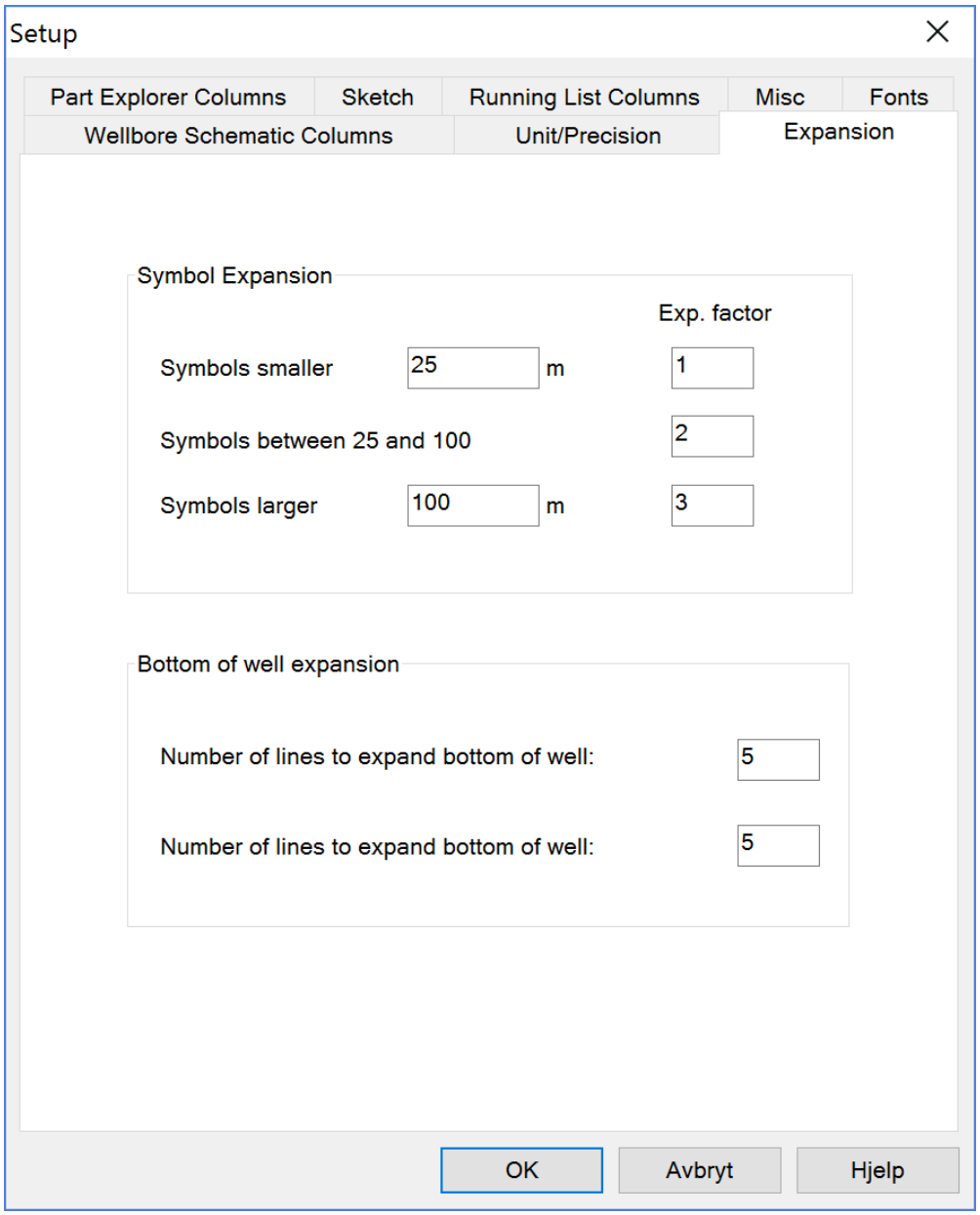
Units/Precision is located under Option, Setup... or by pressing  .



NOTE: This setup will change units and decimals for all functions in CSD, including the printout.

1.12.3 Expansion

Expansion is located under Option, Setup... or by pressing  .



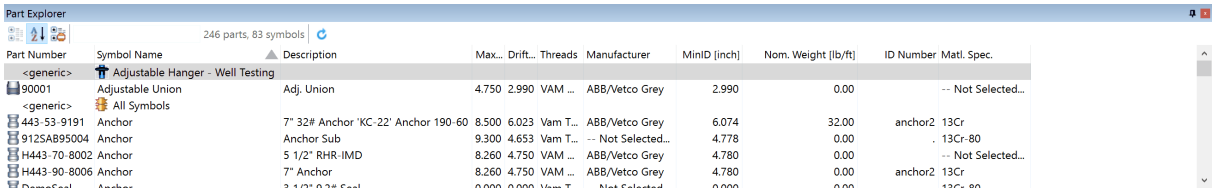
Symbol Expansion: The length of the tubing elements can be changed by changing the expansion factor.

Bottom of well expansion: The length of the last part of the well (area between the last element and TD) can be changed. Number of lines to expand bottom of well can vary from 1 to 100 rows. (5 rows are default).

1.12.4 Part Explorer Columns

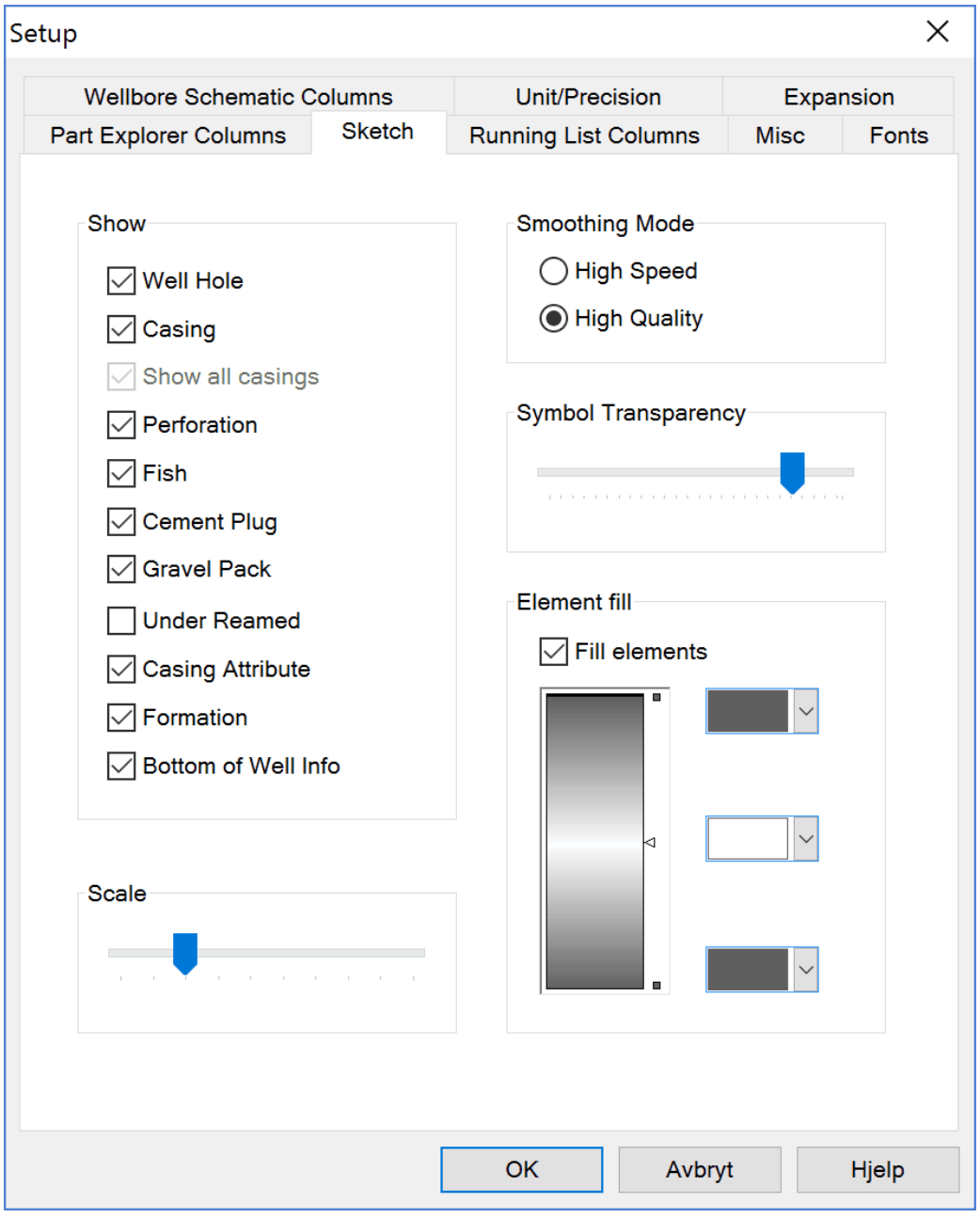
Part Explorer Columns is located under Option, Setup... or by pressing  .

Select which columns to appear in the search criteria for the Part Explorer.



1.12.5 Sketch

Sketch is located under Option, Setup... or by pressing .



Show: Check off which information you wish to appear in the sketch window.

Smoothing Mode: This will effect the appearance of the sketch.

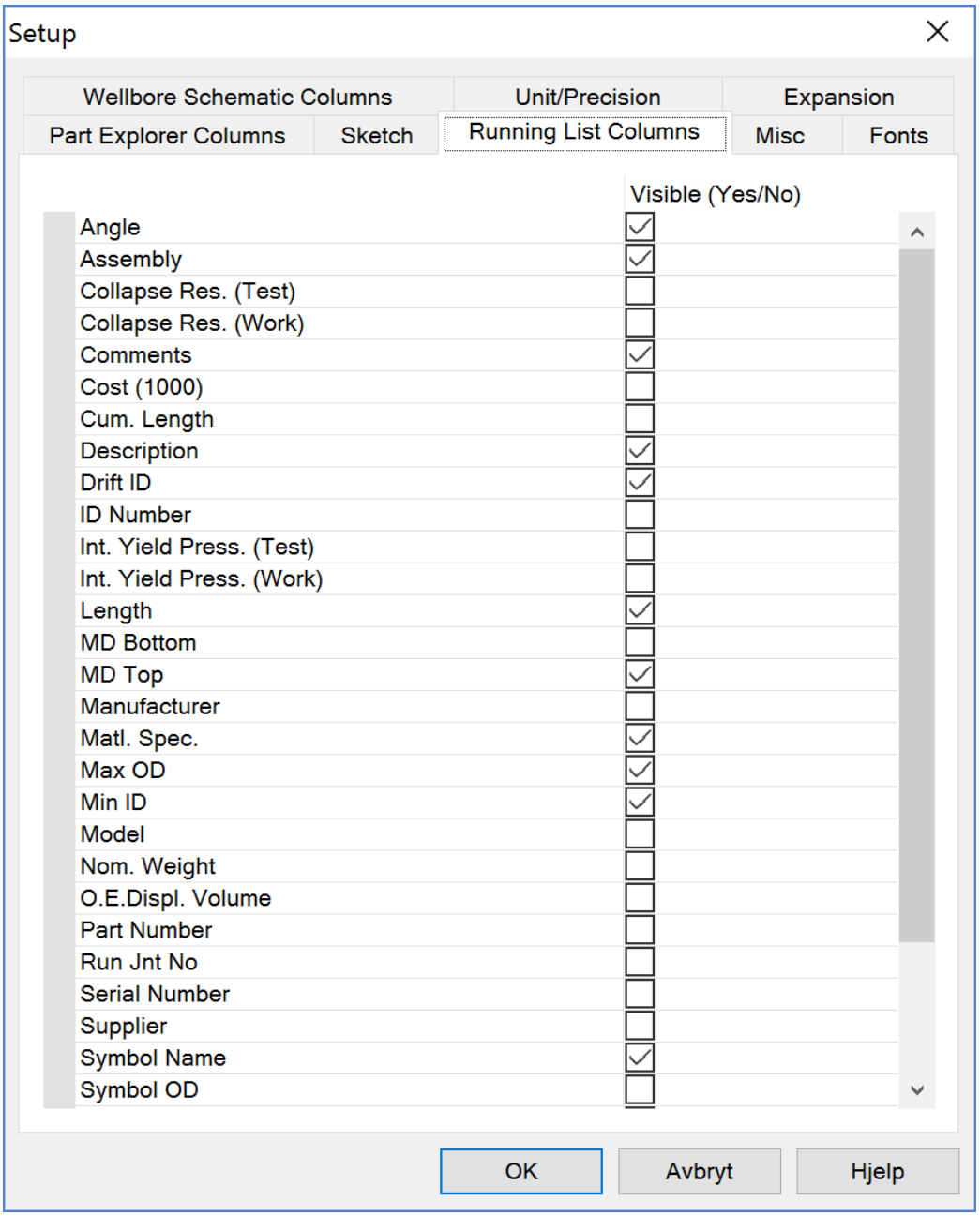
Symbol Transparency: Move the arrow to the left to make the symbols in sketch more transparent, and opposite in the other direction.

Element fill: It is also possible to personalize fills for the symbols in the sketch. You can edit the color, position or choose not to have fill at all.

Scale: Adjust the scale of the schematic. To enlarge the sketch move the arrow to the right, and opposite in the other direction.

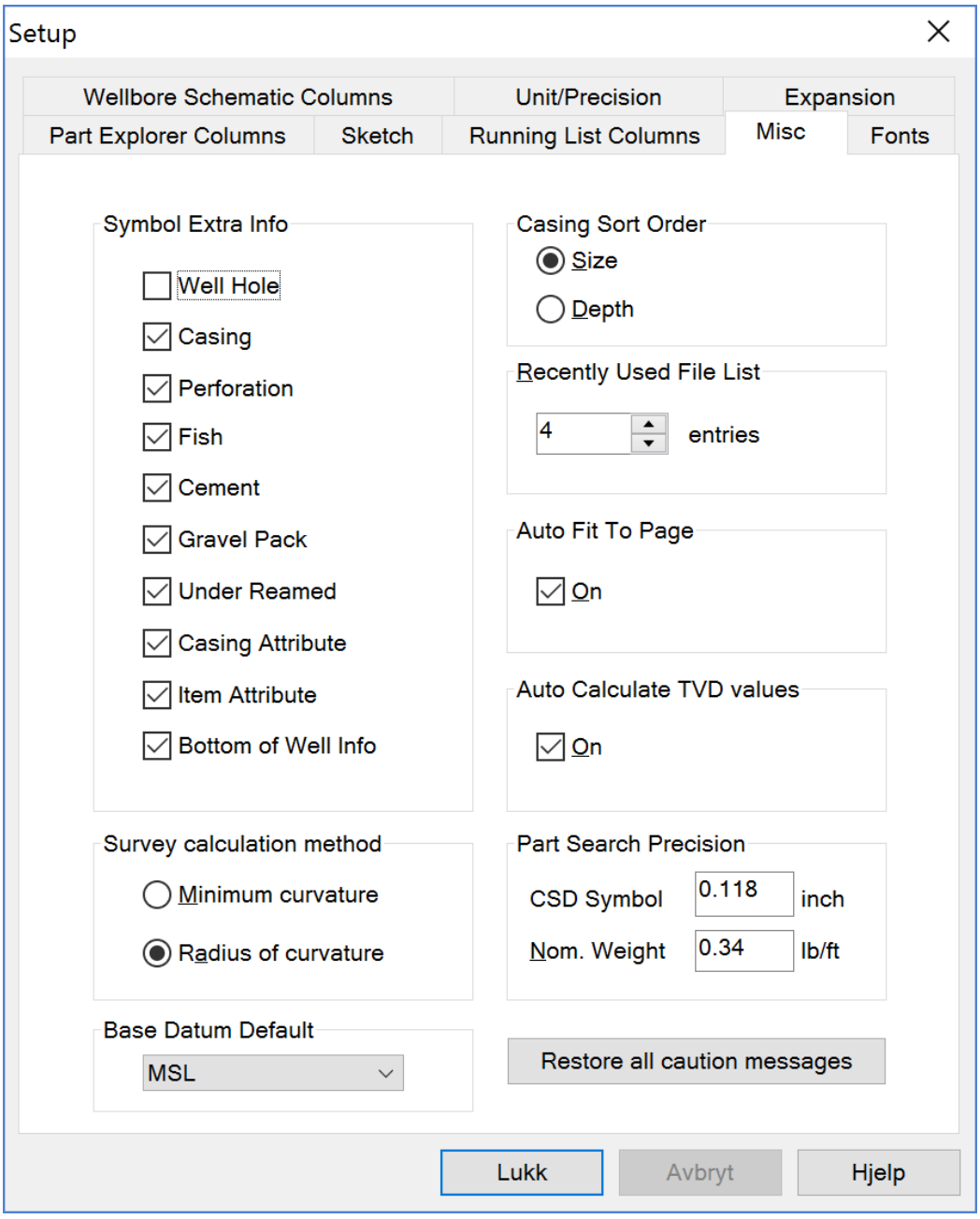
1.12.6 Running List Columns

Running List Columns is located under Option, Setup... or by pressing  .



1.12.7 Misc

Misc is located under Option and Setup... or by pressing .



Symbol Extra Info: In this section you can choose which text info to appear in the Symbol Extra Info column found in the Schematic window.

Casing Sort Order: Choose to sort casing according to size or depth. This will effect the casing list

in Well & Completion Attributes under casing tab.

Recently Used File List: In the File menu bar, you can view the last visited wells (MRU list). In this setup, you can choose a number from 1 to 9 on how many wells to appear in the list.

Auto Fit To Page: The Schematic columns are scaled to fit the printed page margins. Default is "On".

Auto Calculate TVD values: By checking off this section, all true vertical depths columns in CSD will be auto calculated when survey data is transferred. Default is "On".

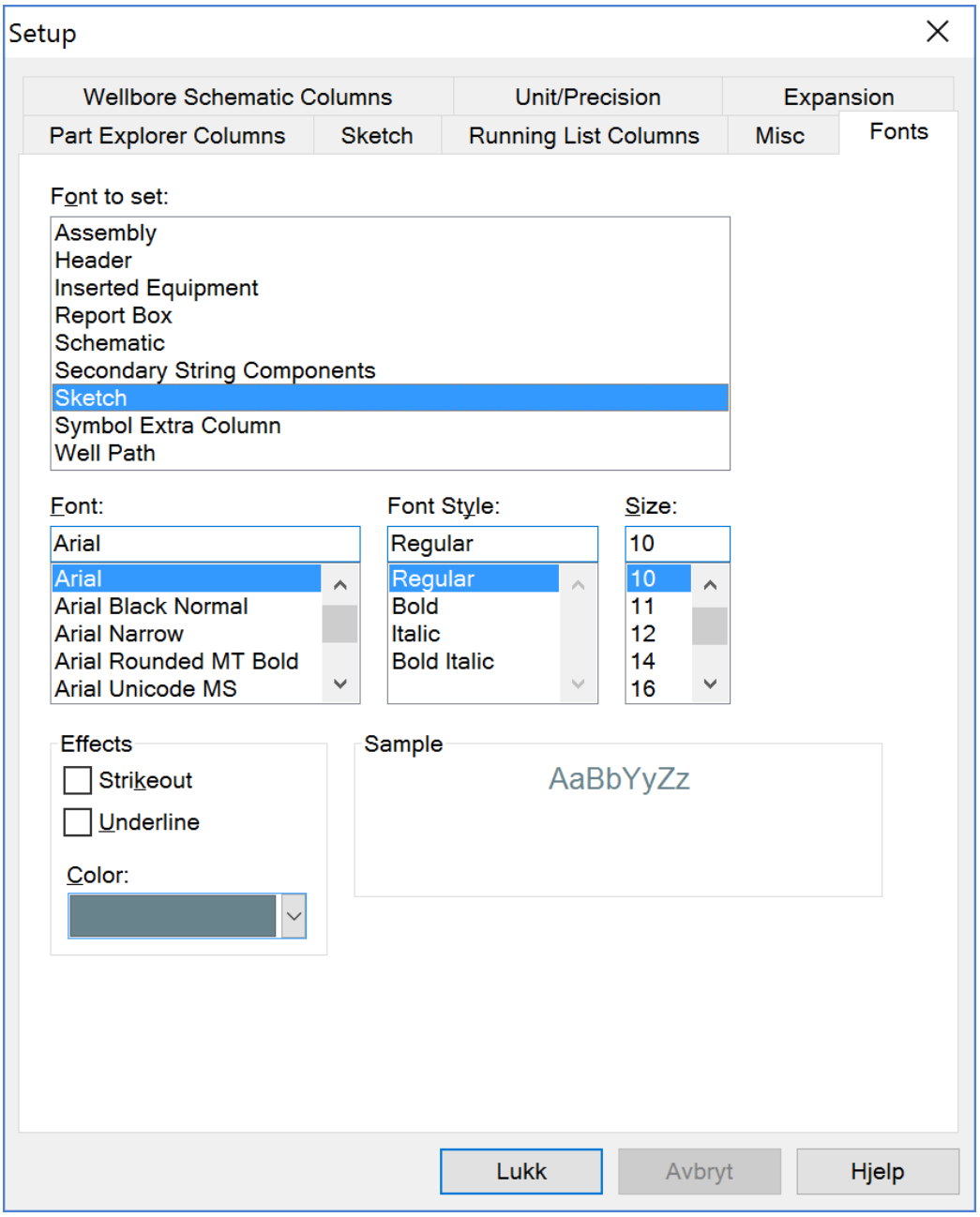
Part Search Precision: The search field CSD Scale OD and Nom. Weight are special. The values entered are starting point for intervals. As an example: If CSD Scale OD search precision is 0.1 and you enter 5 in your search, all CSD Scale between 4.9 and 5.1 are included in the search.

Base Datum Default: Choose MSL or LAT as datum default base.

Restore all caution messages: Enable all system warning messages.

1.12.8 Fonts

You can regulate the font for assembly, completion components etc. in Option, Setup and Fonts tab or by pressing  in the toolbar.

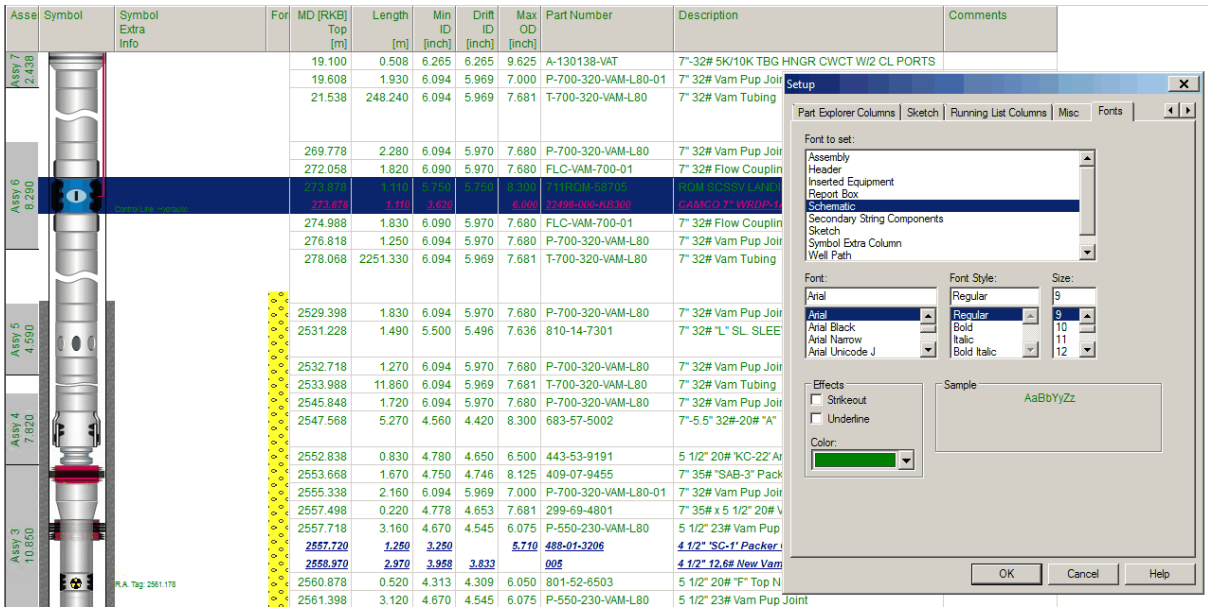


1. Mark which font you wish to edit.
2. Choose font, font style and size.
3. You can also add effects such as strikeout, underline and choose color for your font.
4. Press OK.

NOTE: This setup also represents the font appearance on the printout.

Terminal Server Font

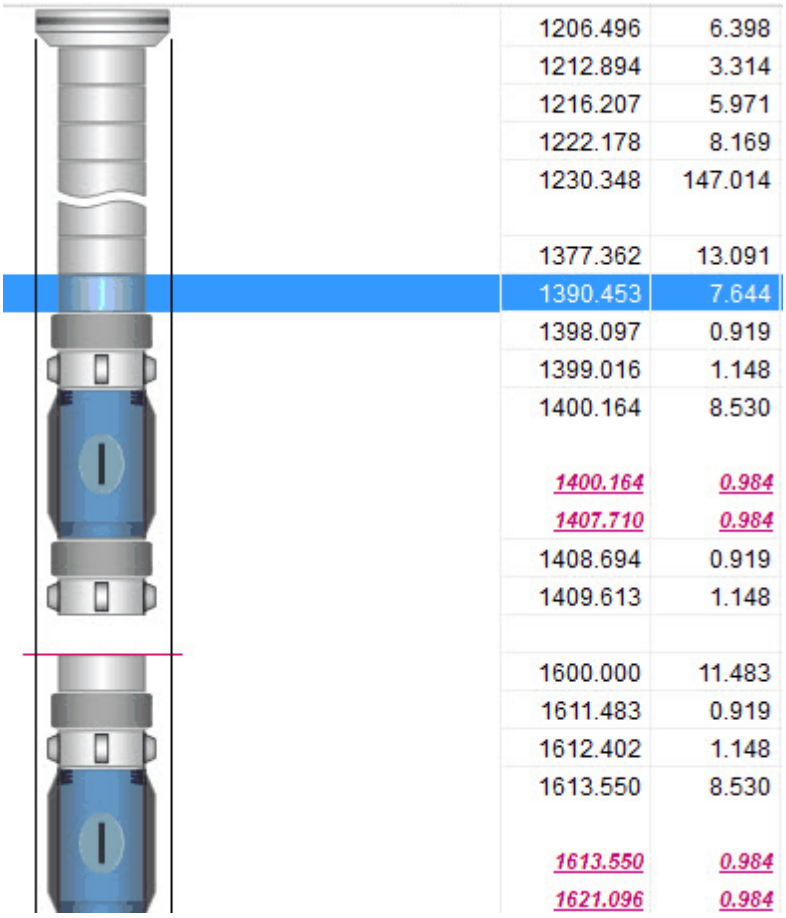
Tip! When running CSD on Terminal Server / Citrix you may need to adjust the Schematic font color to make the text visible when marking an element in the grid.



1.13 Miscellaneous

1.13.1 Fixed Depth

An element can be locked to a specific depth. This function is used if you have two string in the well (see example below), want to make a stinger, to set the starting point on a lateral wellbore etc.



1206.496	6.398
1212.894	3.314
1216.207	5.971
1222.178	8.169
1230.348	147.014
1377.362	13.091
1390.453	7.644
1398.097	0.919
1399.016	1.148
1400.164	8.530
1400.164	*0.984*
1407.710	*0.984*
1408.694	0.919
1409.613	1.148
1600.000	11.483
1611.483	0.919
1612.402	1.148
1613.550	8.530
1613.550	*0.984*
1621.096	*0.984*

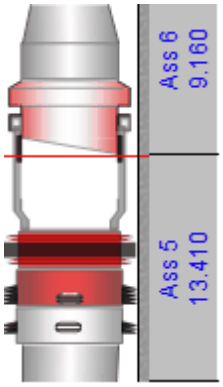
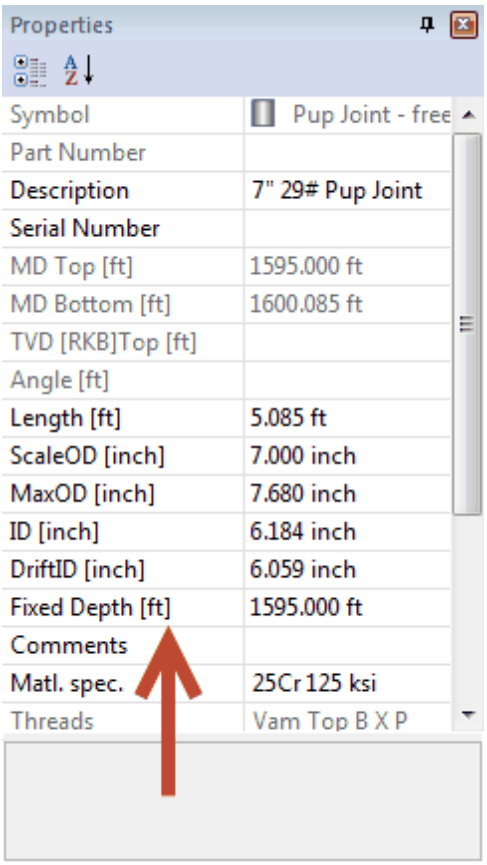


Fig. 1: The second pup joint has been set to Fixed Depth = 1600 m

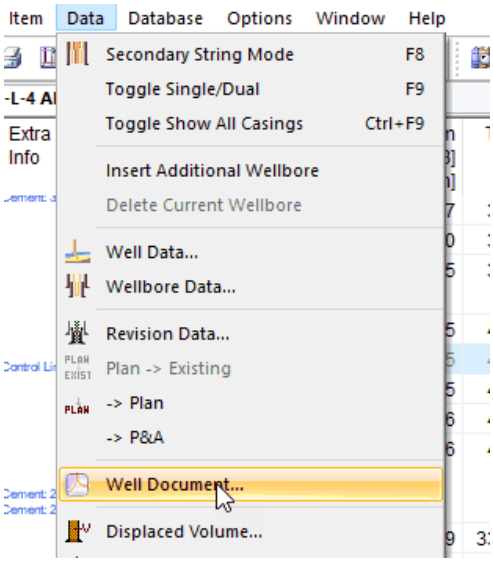
Fig 2: A Seal Stem is stung into a PBR by setting the PBR to a fixed depht

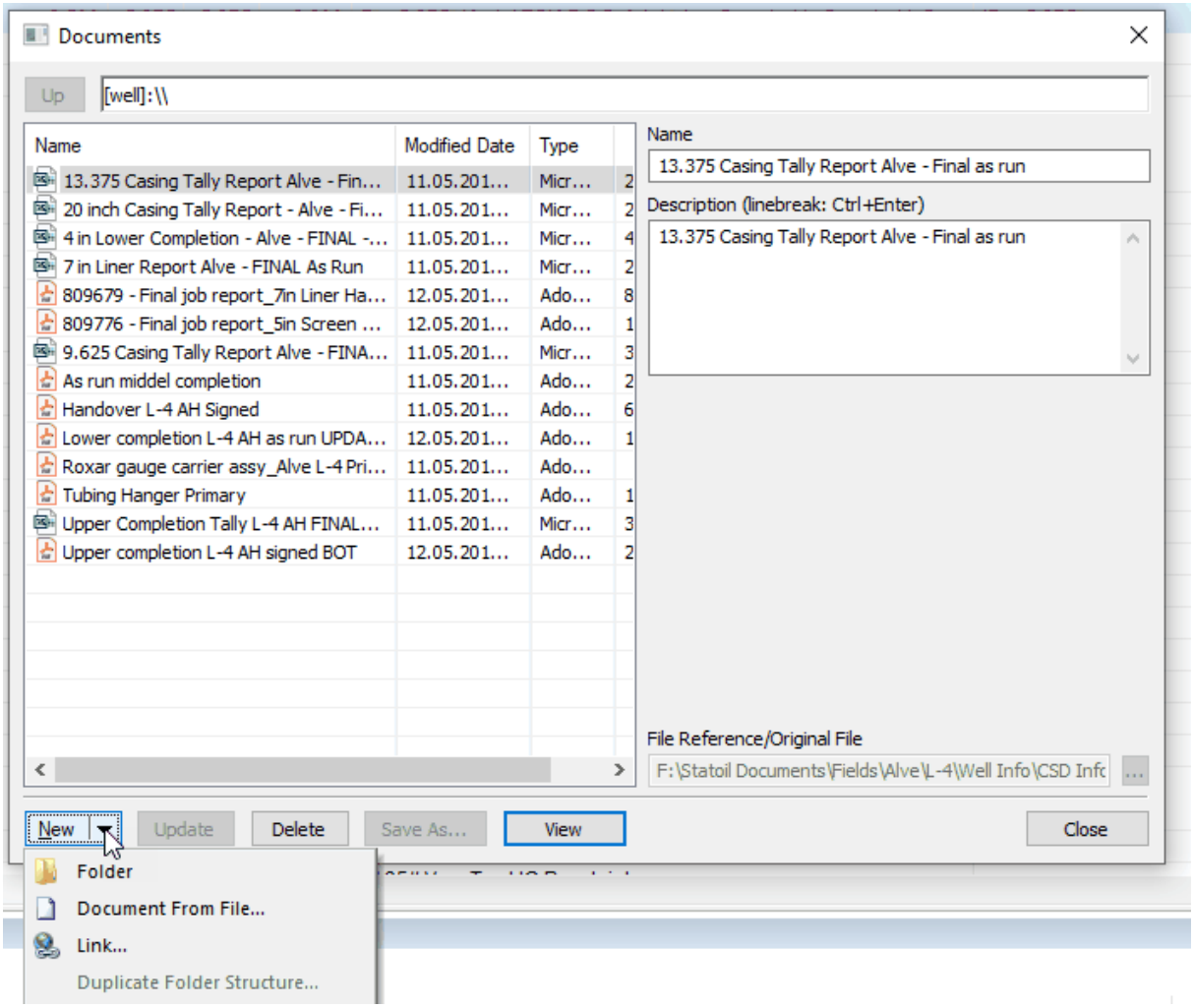
1. Highlight the row containing the element you want to set to a specific depth.
2. Right click and choose "Fixed Depth..." and enter the depth. Remove it by delete the number. It is also possible to enter or delete fixed depth in the Properties dialog found at the lower left in the CSD main screen, by entering a number and press Enter or Delete.



1.13.2 Well Document

You can attach any document to a well by choosing Data, Well Document, from the CSD top menu.





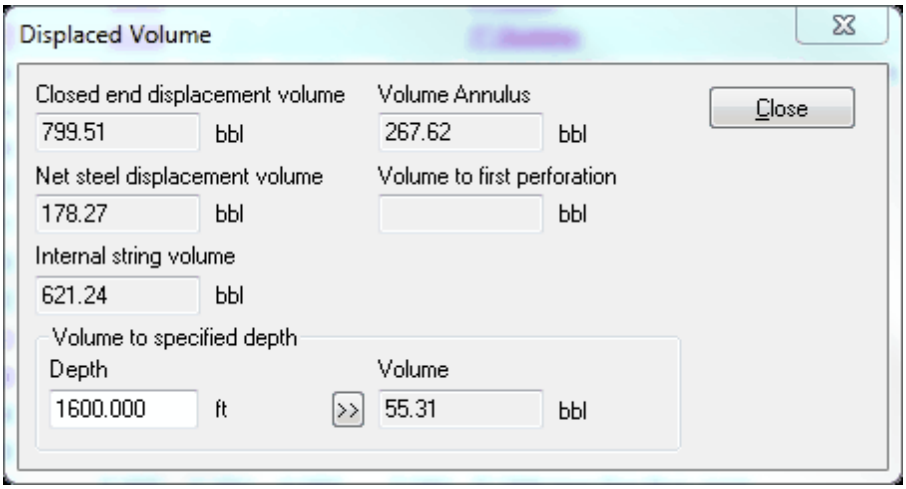
Select "New" and browse to the document, or drag and drop the document into the document area. It's possible to create new folders and organize the documents. The well document area should be used to store STATIC documents, such as assembly drawing, final well reports, tallies etc. You can also add internet links into the document area, for dynamic documents.

The well documents will be available to all users.

NOTE: You should attach all assembly drawing for the current well, as well as the handover documentation.

1.13.3 Volume

It is also possible to do some volume estimations in CSD. The following volume calculations are estimated:

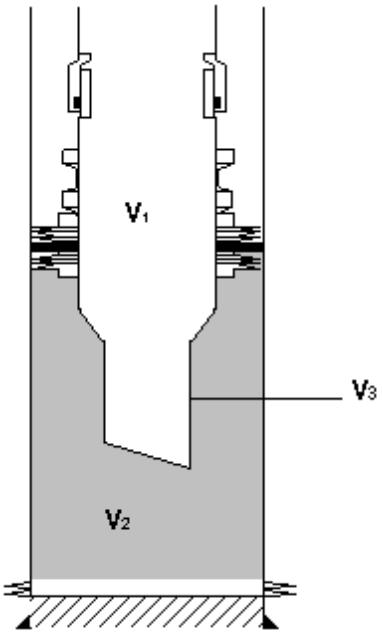


Topic	Description
Closed end displacement volume	The volume inside the string + the volume of the steel. To calculate this volume, CSD use Nom OD of each string element
Volume Annulus	Volume in annulus from hanger to the first packer. Volume is calculated using casing ID and Nom OD of each string element
Net steel displacement volume	Net steel volume. Volume is calculated using Nom OD and Min ID on each element. The volume is Total string displaced volume - Internal string volume
Volume to first perforation	Works only for "simple" completions
Internal string volume	Volume is calculated using Min ID for each element.
Volume to specified depth	Works only for "simple" completions. This functionality is build to calculate down to depth below the last element in a simple completion

Volume calculation will work for:

- “Simple” completions as described below.
- More complex completions where the perforations comes in space before other equipment.

The sketch shows a simple completion.



The volume down to the perforations is given by $V_1 + V_2 - V_3$
where V_1 is the Internal string volume, V_2 is the volume around the tailpipe and the volume in the casing down to the perforations, and V_3 is the Net steel displaced volume from packer down to the entry guide.

The same equation works for volumes to a specific depth. The only difference is that V_2 is changed.

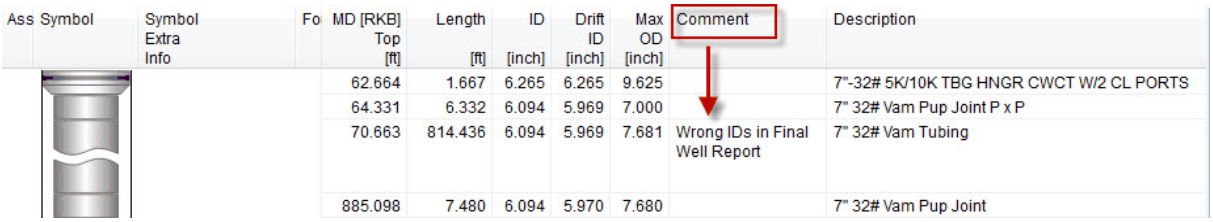
Volume calculations will only be accurate for simple completions.

Some cases might give errors in the calculation:
- Lack of information (ID, OD).
- Complex completions (inserted equipment, use of fixed depth, use of reamed section etc.).
- Cases with no packer in the well.
- Cases where the tubing hanger is positioned higher than the casing top.

1.13.4 Comment

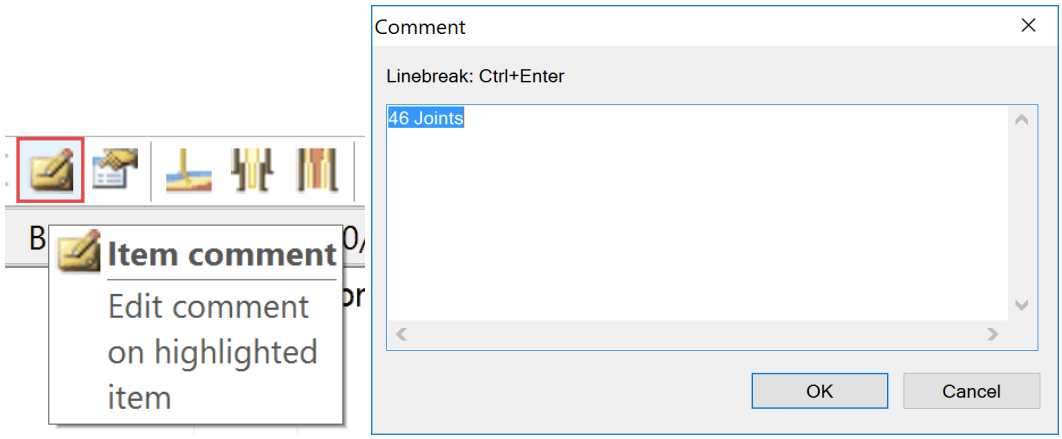
There are several ways to enter a comment to a part or generic item in the completion string schematic drawing.

1. You can click in the Comment cell in the Schematic window, and write a comment. The text will wrap according to the cell width. This will look like this in the schematic window (see figure below):



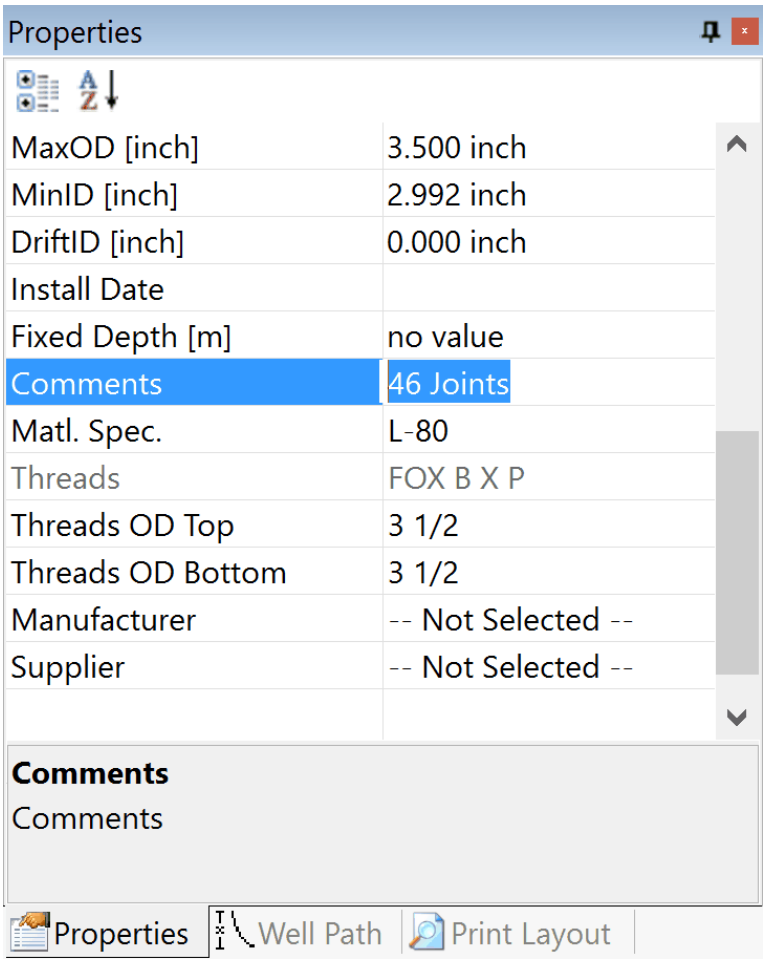
Ass	Symbol	Symbol Extra Info	Fo	MD [RKB] Top [ft]	Length [ft]	ID [inch]	Drift ID [inch]	Max OD [inch]	Comment	Description
				62.664	1.667	6.265	6.265	9.625		7"-32# 5K/10K TBG HNGR CWCT W/2 CL PORTS
				64.331	6.332	6.094	5.969	7.000		7" 32# Vam Pup Joint P x P
				70.663	814.436	6.094	5.969	7.681	Wrong IDs in Final Well Report	7" 32# Vam Tubing
				885.098	7.480	6.094	5.970	7.680		7" 32# Vam Pup Joint

2. Highlight an element and click the Item comment icon on the CSD top menu. Here you can add fixed linebreaks by clicking Ctrl+Enter.

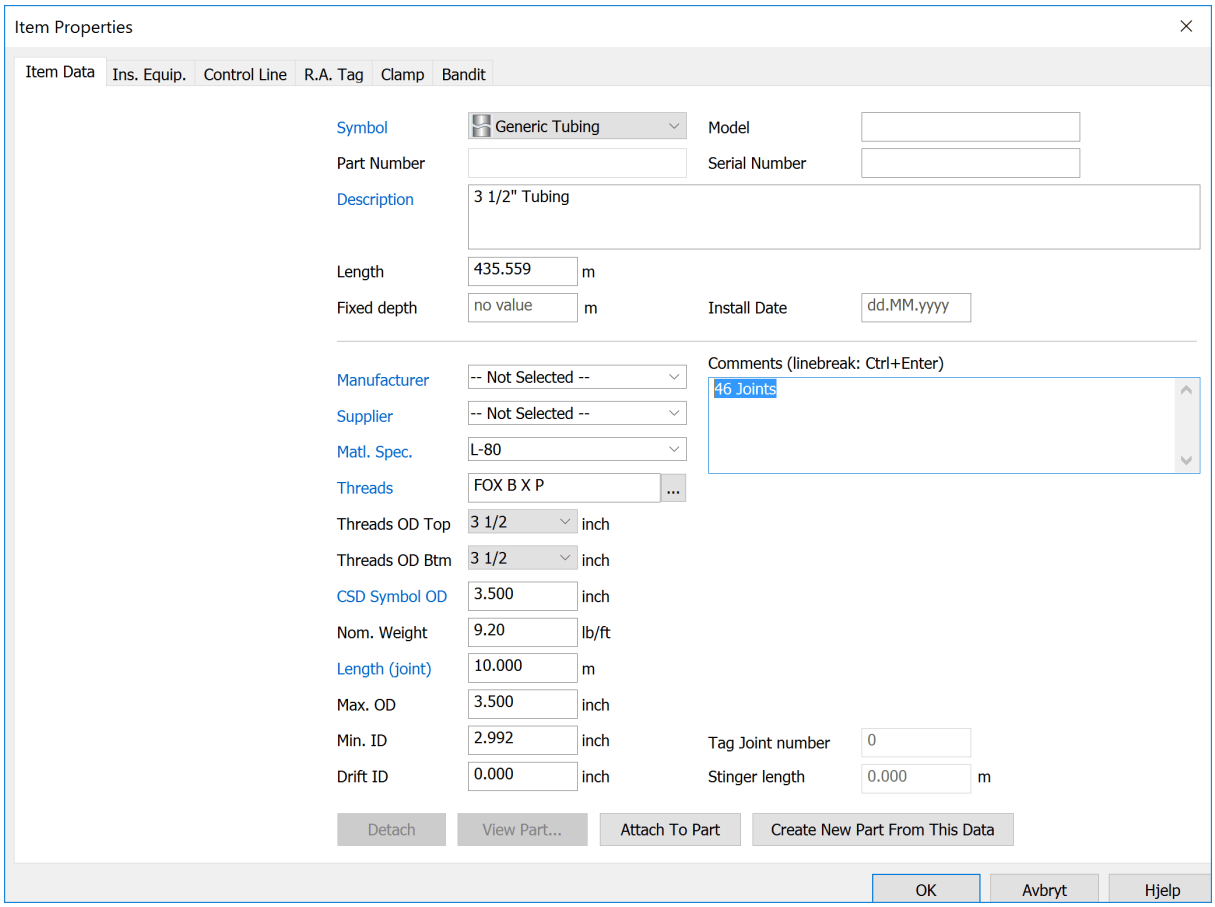


Tip! You can insert blank linebreaks in Item Comment to expand the symbol row in the Schematic mode.

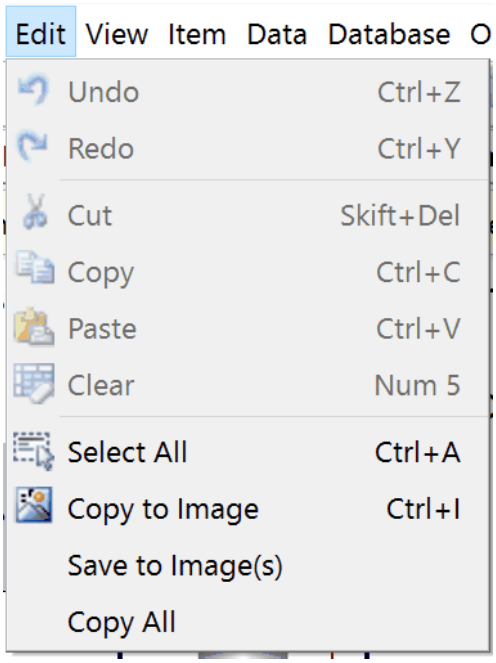
3. Highlight an element, and add/edit a comment In the Properties dialog:



4. Right click an element, choose Item Properties..., and add/edit a comment in the Comments area:



1.13.5 Copy & Paste from CSD



Copy to Image

Choosing Edit, Copy to Image, copies the active Schematic, Sketch or Well Path to the clipboard. This enables you to paste it into other applications such as MS Word, MS PowerPoint etc. The image is built in two formats: Metafile and bitmap. Choose the format that gives the best result in the external application.

Save to Image(s)

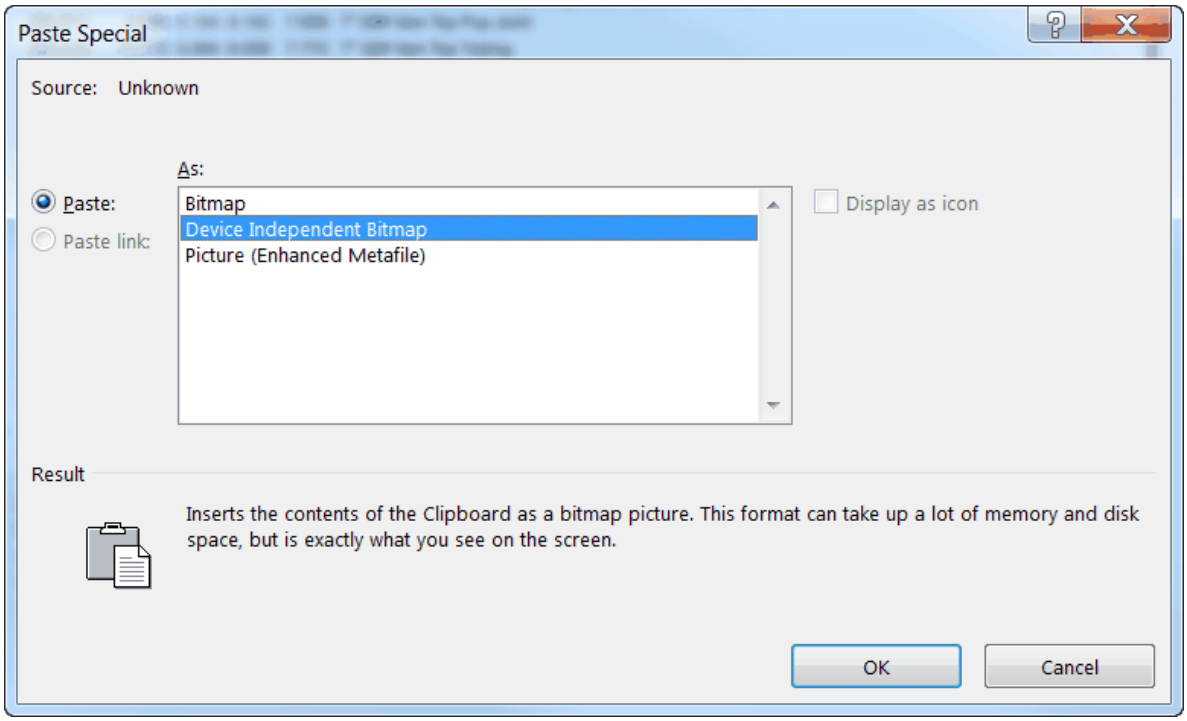
Choosing Save to Image(s), enables the user to save the current Schematic or Sketch as images, dividing the well completion into multiple pages following the PDF print template.

Copy All

Choosing Edit, Copy All, enables you to copy the entire well schematic and all the attributes such as Casing, Perforation etc, and paste into a new/blanc schematic revision.

Paste quality

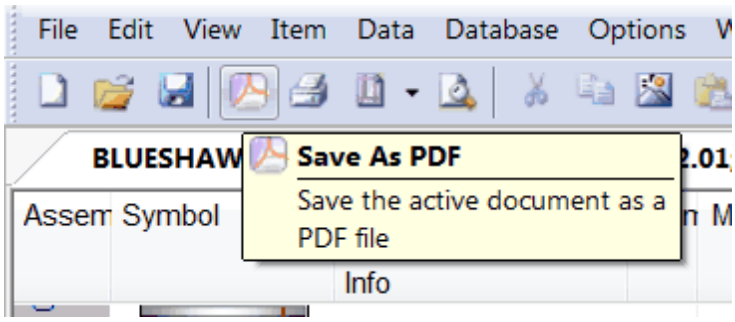
To paste high quality content from CSD into MS Office applications, please use **Paste Special…, Device Independent Bitmap**.



1.13.6 Save As PDF

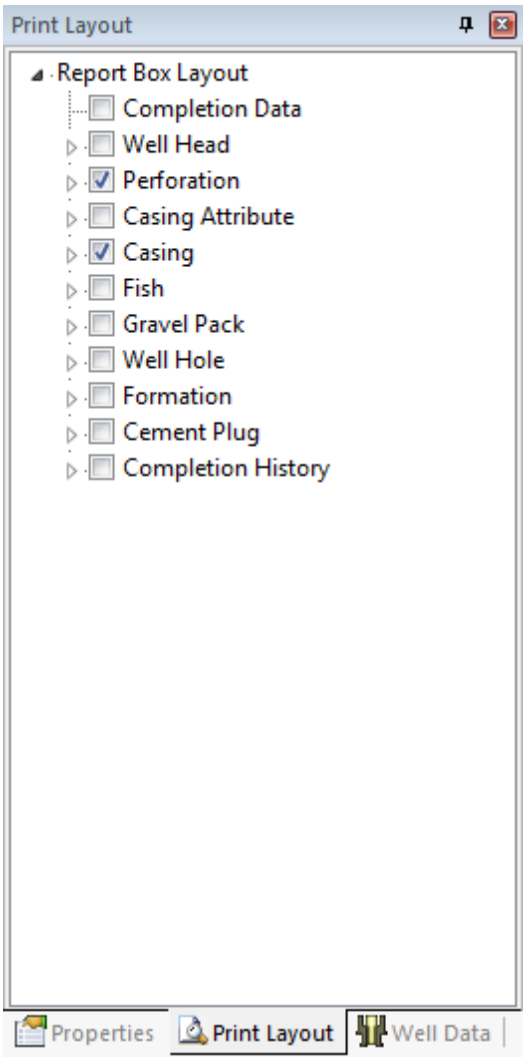
CSD comes with a built in PDF printer, allowing you to create save the CSD well schematics as PDF files.

Open a well Schematic in Schematic, Sketch or Well Path mode. Press the Save As PDF button in the toolbar.



This will save the current window user is in as a pdf file. The sketch mode will be saved as the sketch would appear in the print out of the well.

In the schematic window, this function will save the Schematic of the well including the report boxes that has been checked off in the Print Layout toolbox.



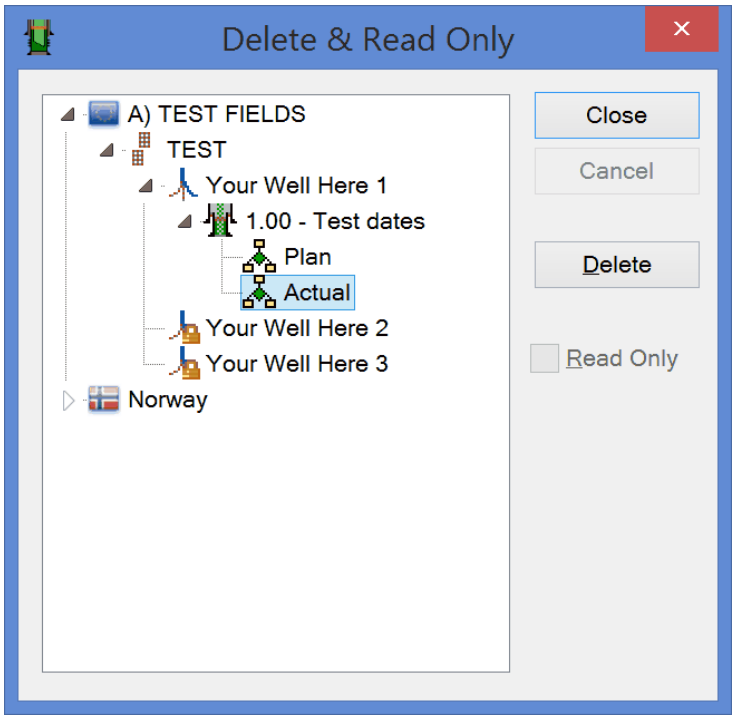
Tip! If the Print Layout toolbox is not visible in your CSD screen, go to View, Toolbars and Docking Windows and select Print Layout.

1.13.7 Delete Completion

If you need to delete a schematic revision go to Database, Administration, Delete & Read Only...

Mark a well completion revision and press Delete. You can only delete completion modes, not the whole node (I.e. 1.00). This has to be done by the System Administrator.

NOTE: You can only delete well completions from fields that you have write access to.



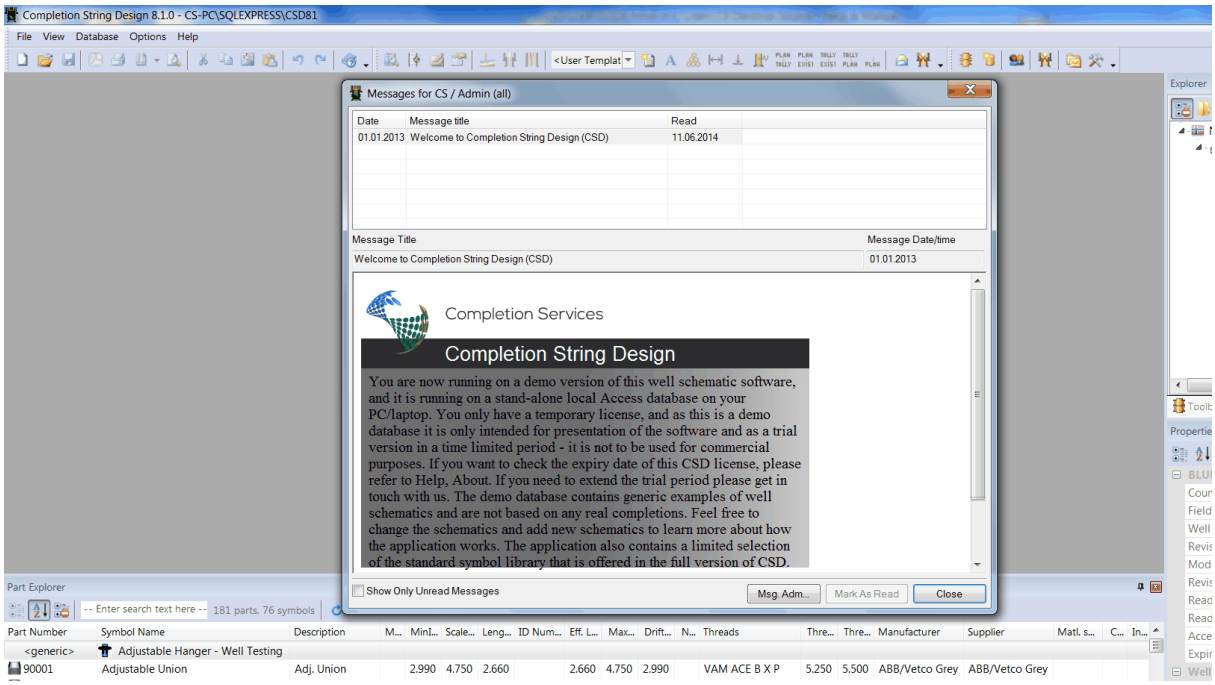
1.14 Administration

The SYSTEM ADMINISTRATOR plays a key part in CSD, and has the responsibility to:

- Define users and their access.
- Keep the part database updated.
- Keep the code tables updated.
- Define new fields and wells.
- Edit existing field and well names.
- Move a wells between fields .
- Define standard setup.
- Assist users.

1.14.1 User Messages

The System Administrator can create user messages which will show when the application starts.

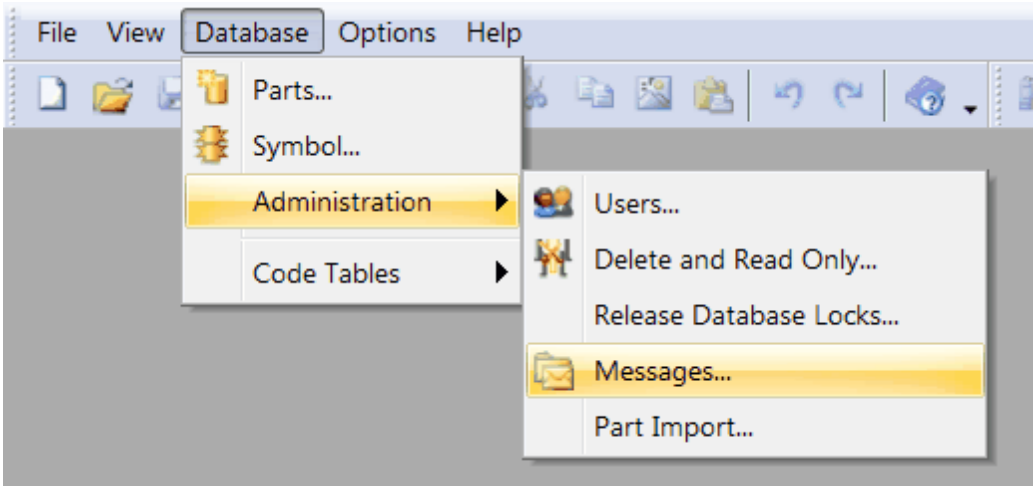


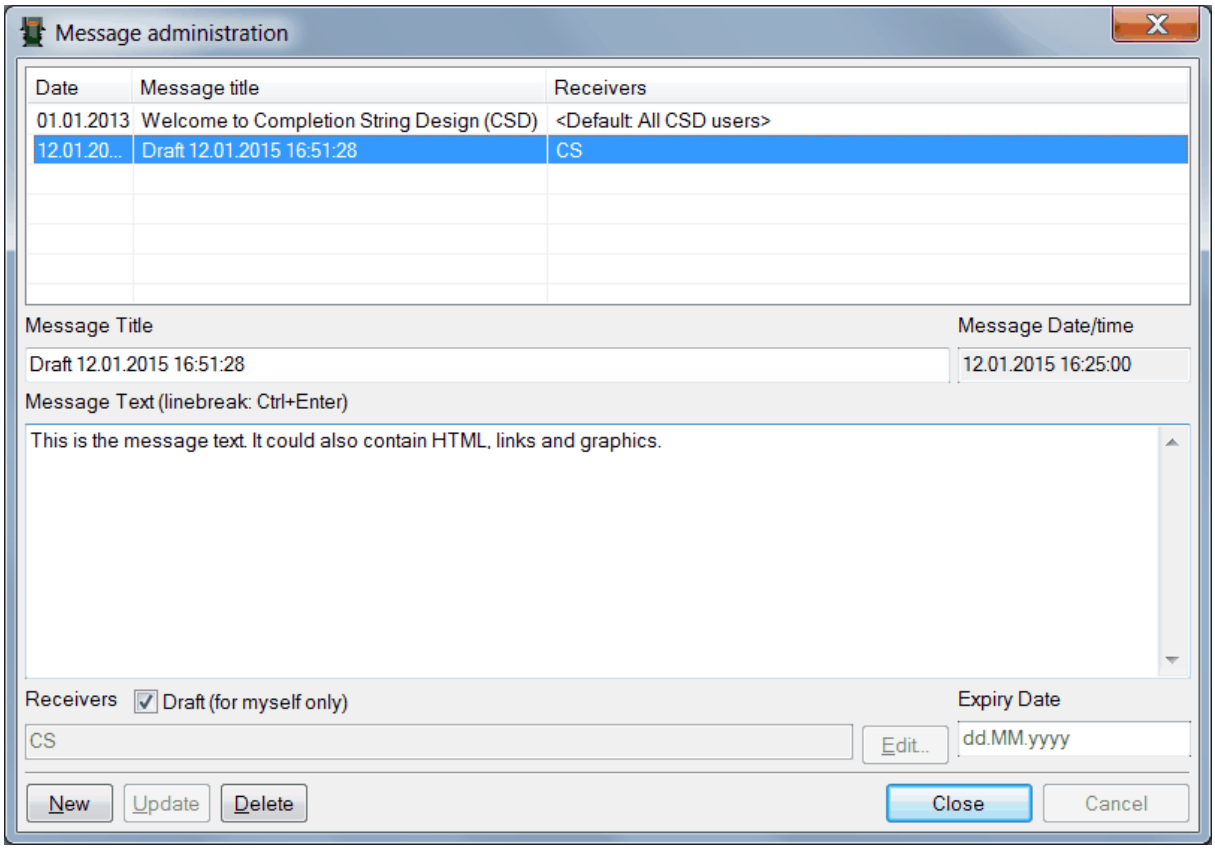
The user can choose "Mark As Read" to hide it from application startup.

Tip! All messages are found in the CSD top menu; Options, Messages...

Create a new user message

To create a new user message, go to Database, Administration, Messages...





1. Select New.
2. Select Draft (for myself only).
3. Enter message title and message text. Note that the message text could also contain HTML and pictures.
4. Enter the message expiry date (if any), or leave blank.
5. To publish; uncheck Draft (for myself only) and press Edit to select recipients.

Update an existing message
Highlight one of the rows in the list. Edit the message and press Update.

Delete a message
Push the Delete button after highlighting a row in the list.

1.14.2 Users & Roles

The System Administrator maintains the list of users and their access level.

Choose Database, Administration, Users. The User dialog box can have four tabs:

- Person
- Field/Person
- Well/Person
- Person Rights

1.14.2.1 Person

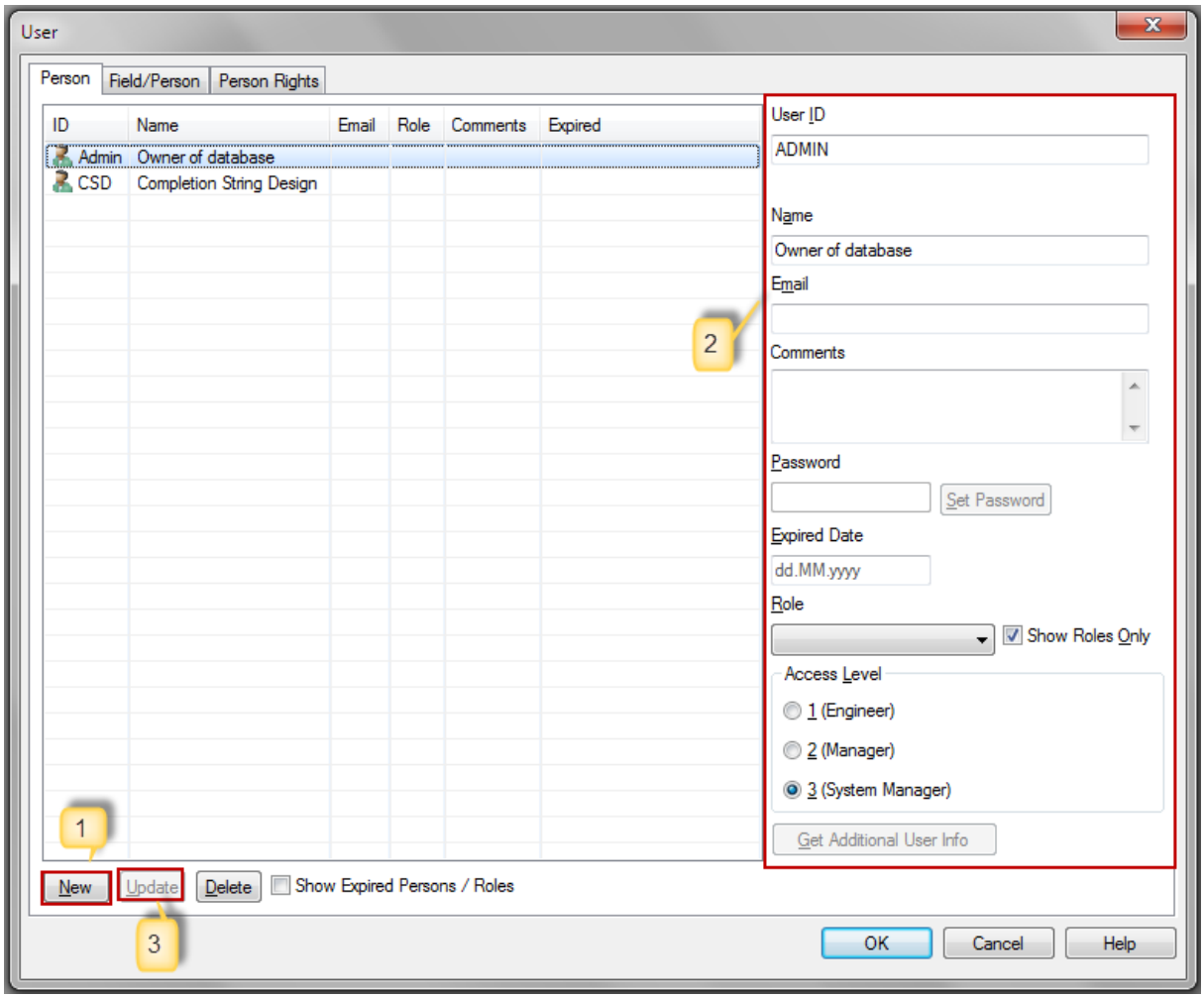
Users & Roles

NOTE: You can use the Person tab to create new **users**, and to create **user roles** which could be assigned to the users.

You have to be a System Administrator to be able to create, edit (and delete) users and user roles.

In Database, Administration, Users; Choose the Person tab.

Create new user



1. Select New.

2. Enter info about the new user or user role.

3. Update the list.

Input	Description
User ID	Users ID.
Name	Users full name, or description of the user role.
Email	Users email (optional).
Comments	Additional comments regarding the user or user role (optional).
Password	(Set password for the user) **NOTE:** This should be left blank in most cases, as CSD is commonly installed with auto log in functionality.

Expired date	Expiration date for user (optional). When exceeded, the user will no longer have access to the system.
Role	Defining user roles could be handy in larger companies, to ease the work when giving access to the different users. Persons can be arranged into categories by assigning them to a role (one role only!). When a user has been given a role, the user will have the same access level and field access as defined in the role. I.e. user role: WRITE_ACCES_NORWAY.
Show Roles Only	Shows only roles that already has been used in the dropdown. Uncheck to view all Person / Roles.
Access Level	There are three types of access level: 1. **Engineer**: Role for the common engineer. It contains read access to all fields by default, and write access to one ore more fields could be entered in the Field/Person tab. 2. **Manager**: Partly admin access to the system including creating Parts, entering equipment- and well Failure, user Message administration. 3. **Systems Manager**: Full access to the system, including Code Tables, Parts and Symbols.
Show Expired Persons / Roles	The list will include the Persons / Roles which has expired. (Shows in red font)

Edit user

- Select the user in the list.
- Edit info about the user or the user role.
- Push Update.

Delete user

CSD keeps a log over everything that a user does. This is to keep track of who has been involved in updating a Schematic. **Due to this one are not allowed to delete a user in CSD**, as this will also delete important history. Instead a user or role can be set to **Expired,** preventing them to show in

the list. (If a user is created but never used for log in, it can however be deleted).

Tip: You can view the expired persons and roles by ticking off Show Expired Persons / Roles in the Person dialog.

Summary

When giving users access to the system, the System Administrator has the following options:

1) Leave the "Role" drop-down blank and set the access lever to 1, 2, or 3 **(Fig1)**. Then go to the Field/Person tab and enter that users write access fields **(Fig2)**.

NOTE: You don't have to enter read access to a field. This is enabled by default.

2) Assign the user to a predefined role, found in the "Role" drop down **(Fig3)**. The user will then inherit the same access as defined in the user role.

Fig1

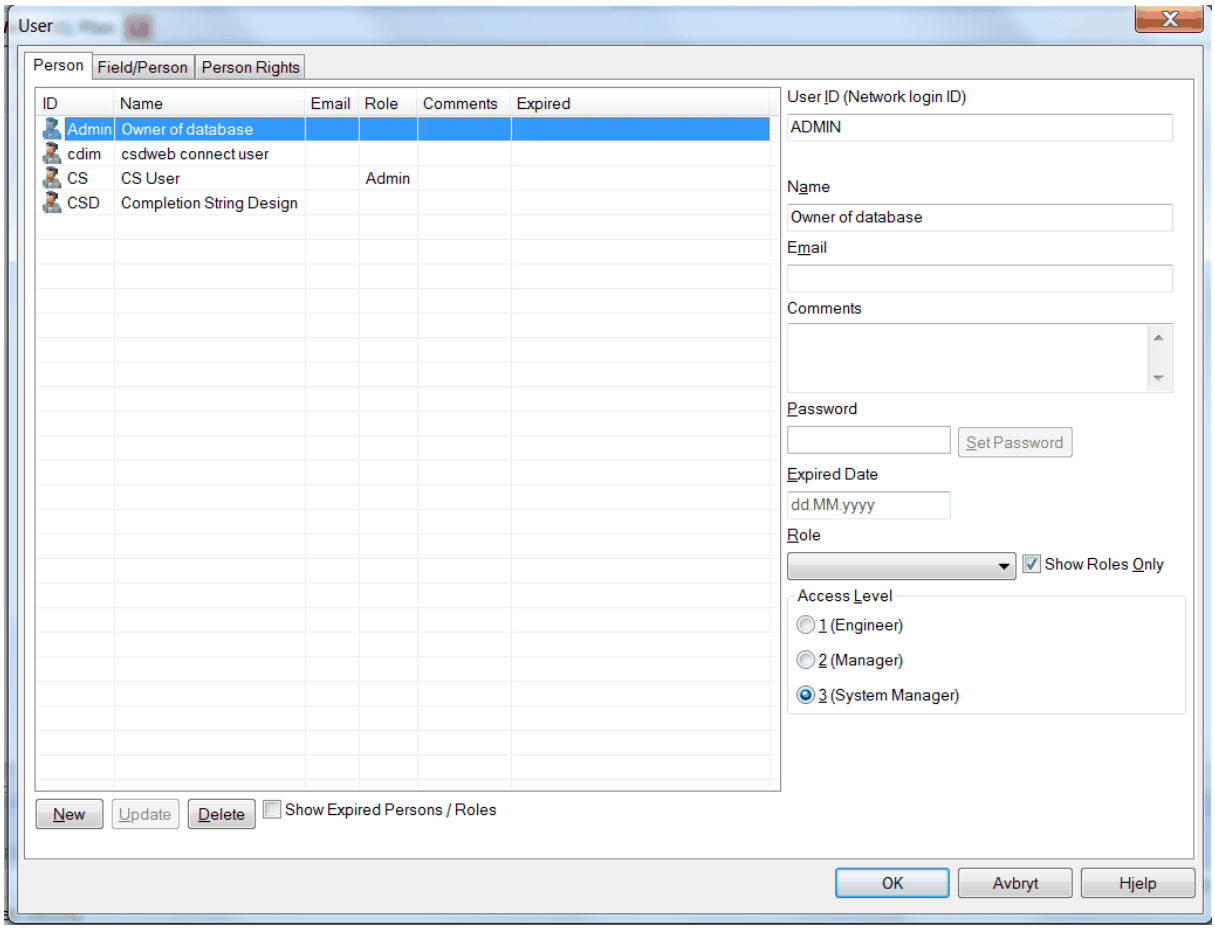


Fig2

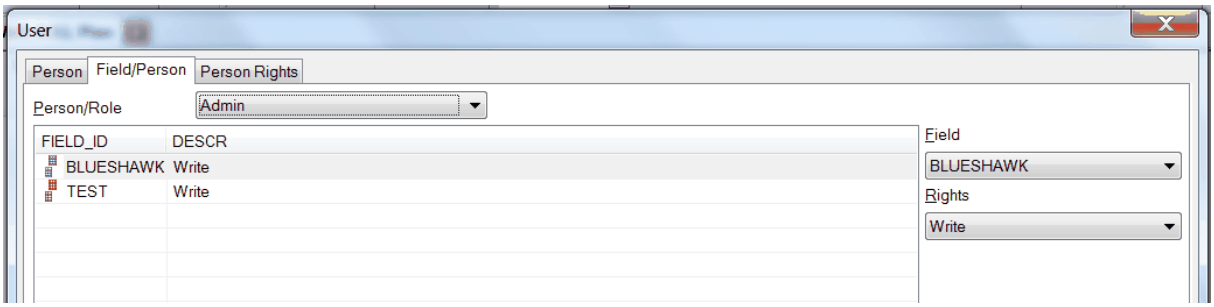
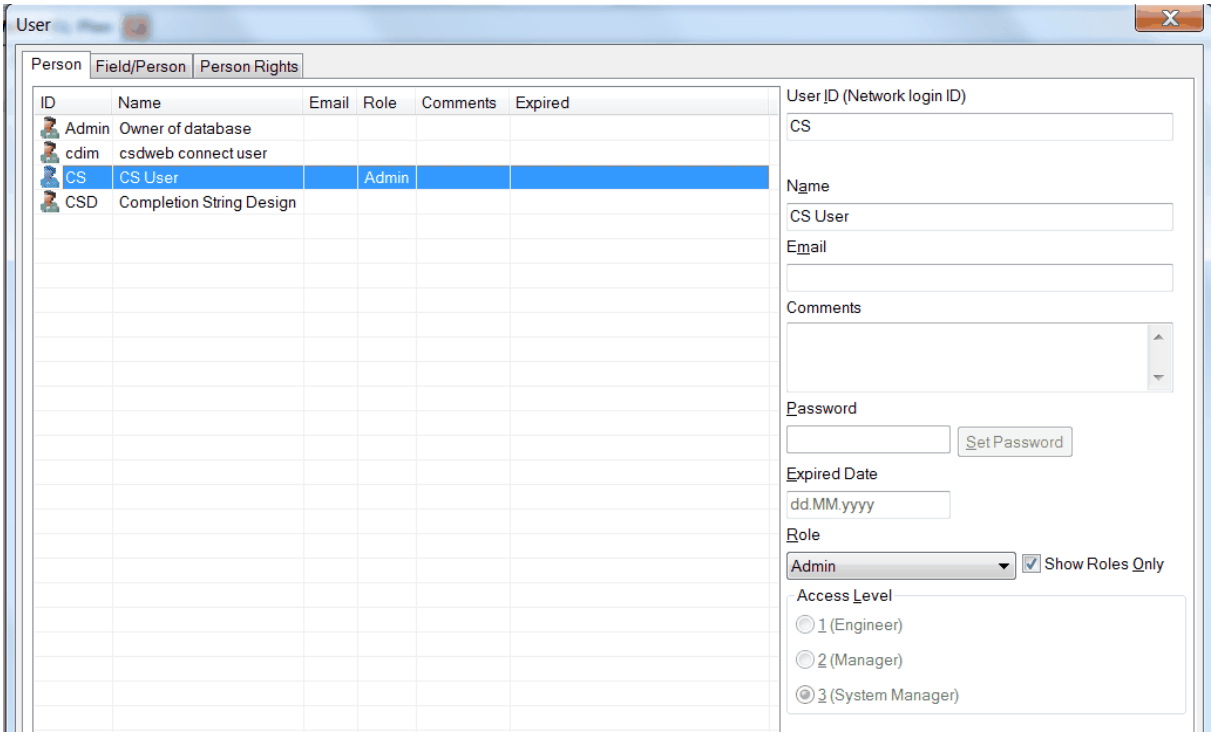
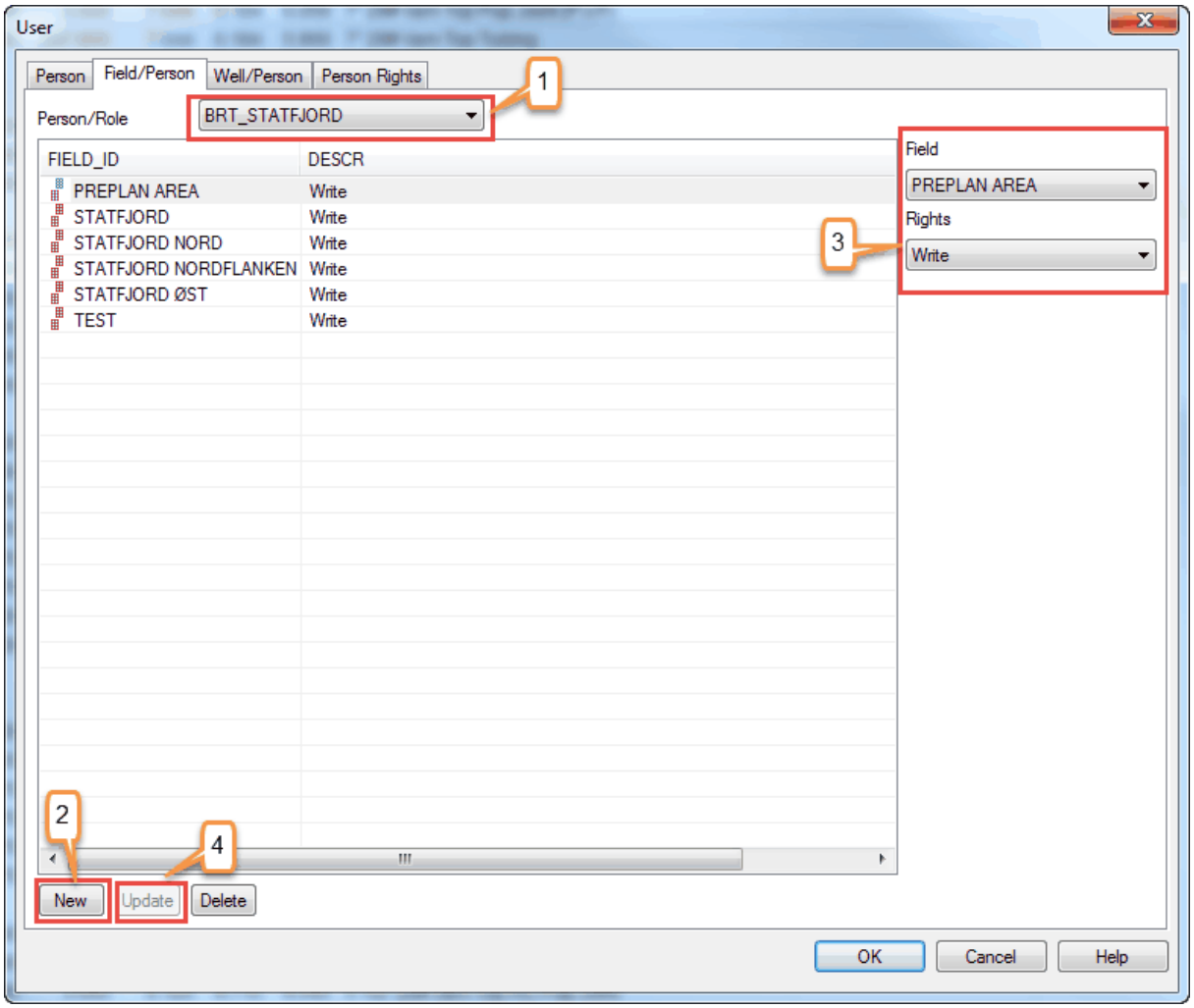


Fig3



1.14.2.2 Field/Person

Choose the Field/Person tab.



1. Choose person or role that you are going to give access to (Choose in the drop down menu Person/Role).
2. Register new access by pressing New.
3. Find the field and choose what rights to the fields you want to give.
4. Update the list.

The list to the left shows which fields the person/role has access to, and what rights that has been given (Read/Write).

1.14.2.3 Well/Person

As a System Administrator you can restrict access to wells. This means that you can give a user access to enter information for one or more wells in a given field.

1. Highlight a person in the Person dialog.

2. Make sure that the "Role" drop down is blank.

3. Got to the Well/Person tab and select New.

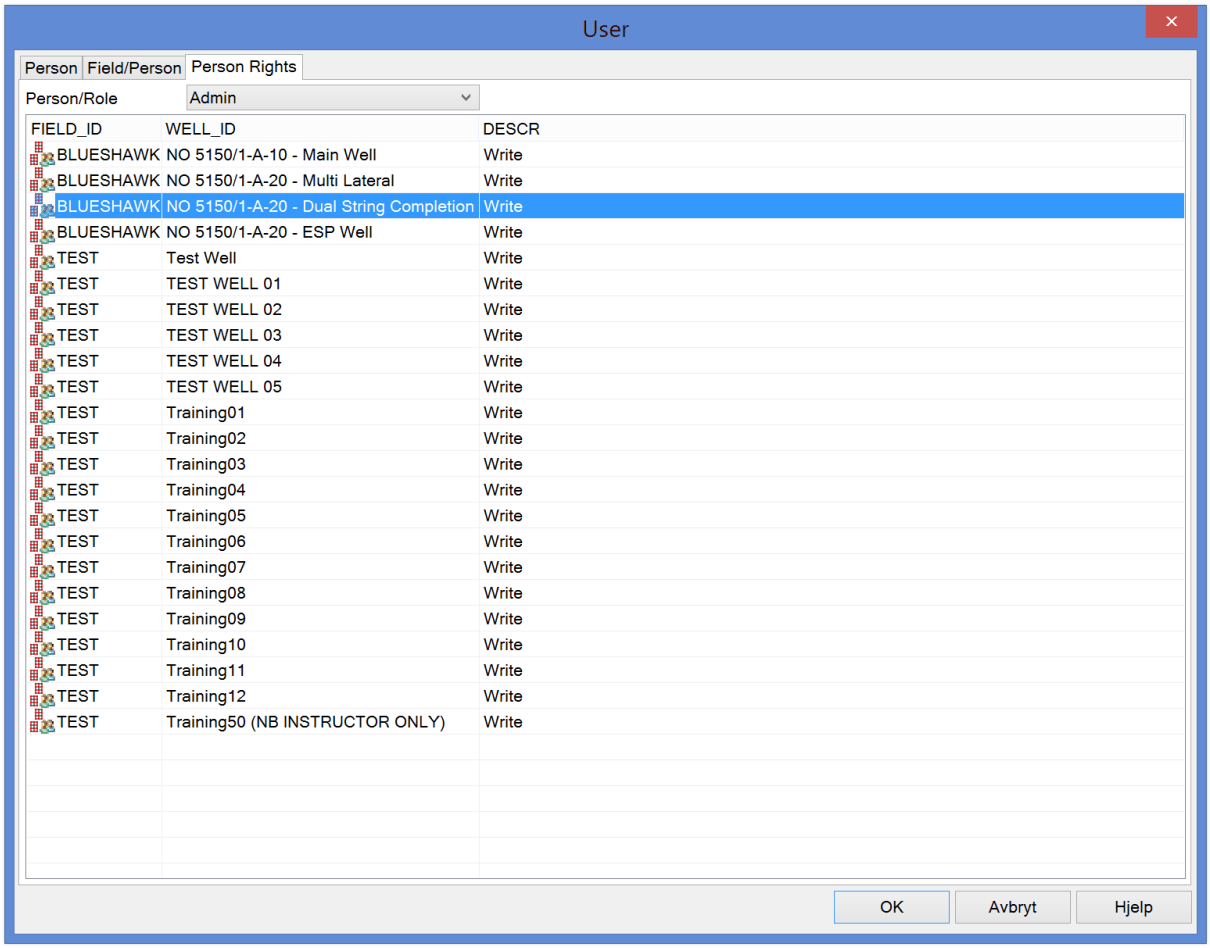
4. Choose the Field, Well and Rights for that well.

5. Update the list.

NOTE: This functionality might be disabled in your company.

1.14.2.4 Person Rights

Gives a summary of the wells and the rights of a person/role.



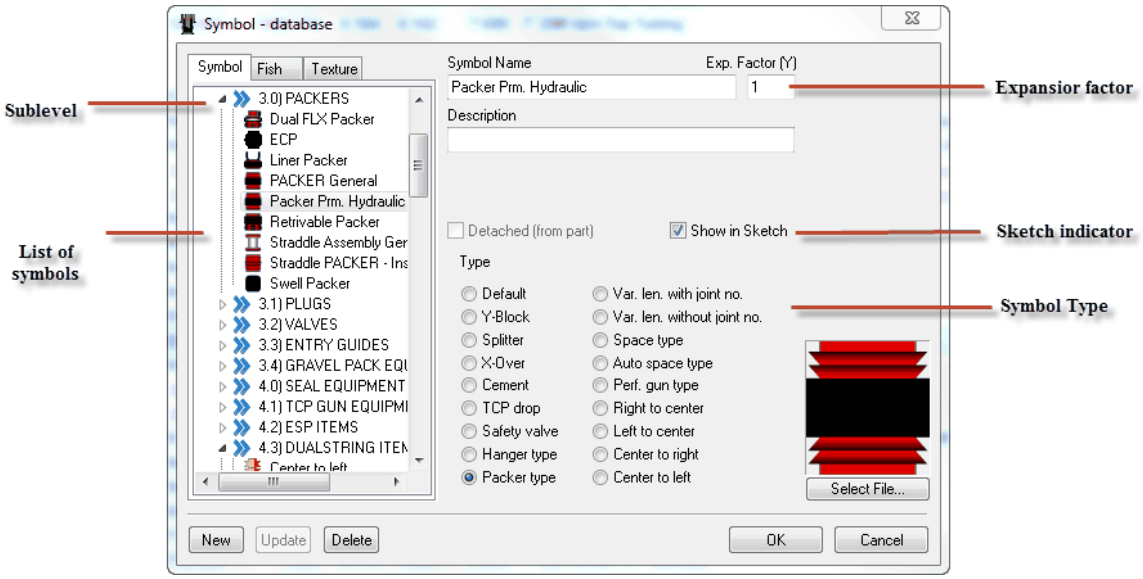
1.14.3 Symbols

NOTE: CSD comes with a default symbol library found in Toolbox, covering most of the completion equipment types needed to create new parts. You would very rarely have to enter new symbols, but if so it's recommended that you contact the CSD team at http://www.csd.as/contact-us

Go to Database and choose Symbols...

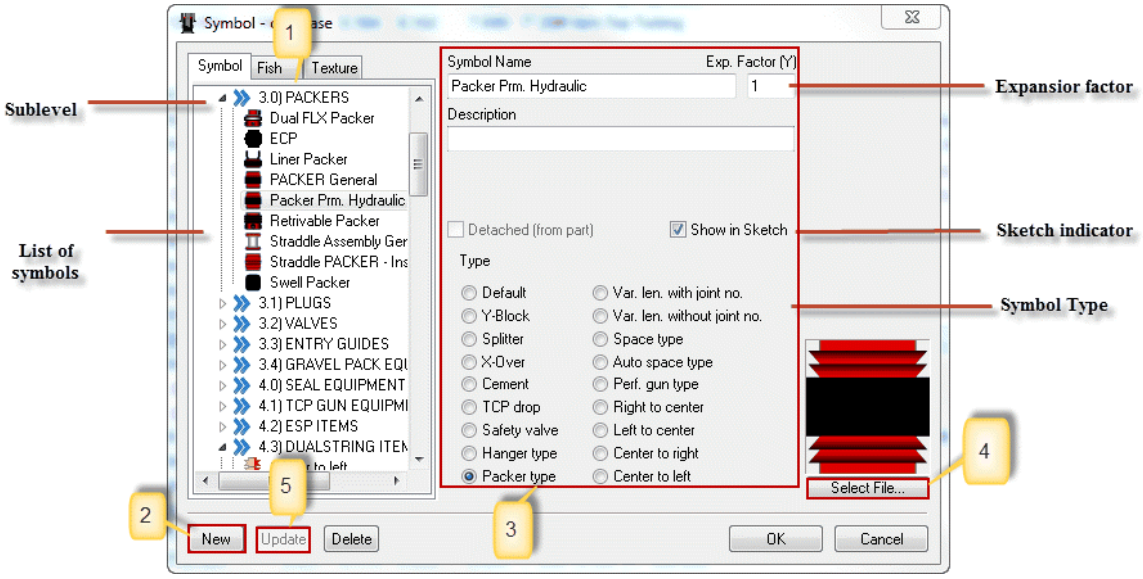
The symbol dialog box is divided in two main parts:

1. Symbol: Symbols that are to be used in the schematics.
2. Fish: Symbols used with Completion Attributes, Fish.
3. Texture: Symbol texture for cement types, casing attribute types, mineral zones and well path textures.



1.14.3.1 Symbol

In CSD you can have several levels on the symbols.



1. If you want to add a new symbol on the main level, you choose Symbol before pressing New. If you want to add a new symbol under an existing one, you choose that one before pressing New.

2. Press New

3. As you see above there are several pieces of information that must be entered for a symbol:

Topic	Description
Symbol Name	Give the symbol a name.
Expansion factor	The expansion factor in the Y-direction for the symbol. This is used to emphasize important symbols like packers, nipples and TRSCSSV. Only integers can be used. The number 1 is equivalent to one row in the schematic.
Description	Short description of the symbol.
Show in Sketch	Tells if this symbol is defined as an "important symbol" that is to be shown in Sketch mode (the simplified schematics). Users can override this setting in Sketch mode, choosing it in the Toolbox.
Detached (from part)	Tells if this symbol can stand on its own feet – so that the elements using this symbol is not connected to the equipment database.
Symbol type	Choose symbol type. The different symbol types can have different properties.

4. Press Update

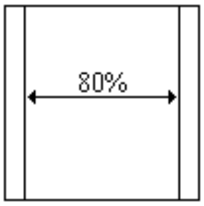
5. Add the symbol image by pressing Load...

6. Press Update

Delete Symbol

To delete a symbol; mark a symbol and press Delete. **NOTE:** You are not allowed to delete a symbol that is used by a database part.

A standard symbol is designed according to the following template using a 10% **transparent** frame at both sides:



With a standard symbol we understand Pup Joint. All symbols must contain a transparent frame.

Arranging symbols in groups

You can arrange the symbols in logical groups using **Drag and Drop**. If you want Bull plug to be a sub-level to Anchor, you select the Bull plug, press and hold the right mouse button, drag the symbol and drop it on Anchor.

1.14.3.2 Symbol - Fish

You activate the Fish tab when you click Fish in the upper left corner in the Symbol dialog box. Registering Fish is done in the same way as symbols except that you cannot enter Symbol type and Exp. Factor (Y) for a Fish.

It is possible to categorize the Fishes, even though it is not recommendable.

1.14.3.3 Symbol - Texture

Textures are used to display mineral zones, sea and seabed in the well path. You work with textures on the Texture tab located in the upper left corner of the Symbol dialog box. Registering textures is done in the same way as symbols except that you cannot enter Symbol type and Exp. Factor (Y) for textures.

1.14.4 Code Tables

Go to Database, Code Tables.

CSD has a set of code tables that the System Administrator must maintain. This values will show in the different drop down menues in CSD.

Topic	Description
Country	All the countries, country flags and corresponding country codes comes with the system as default
Operator	Register operators and the corresponding operator logo
Field	Registering fields

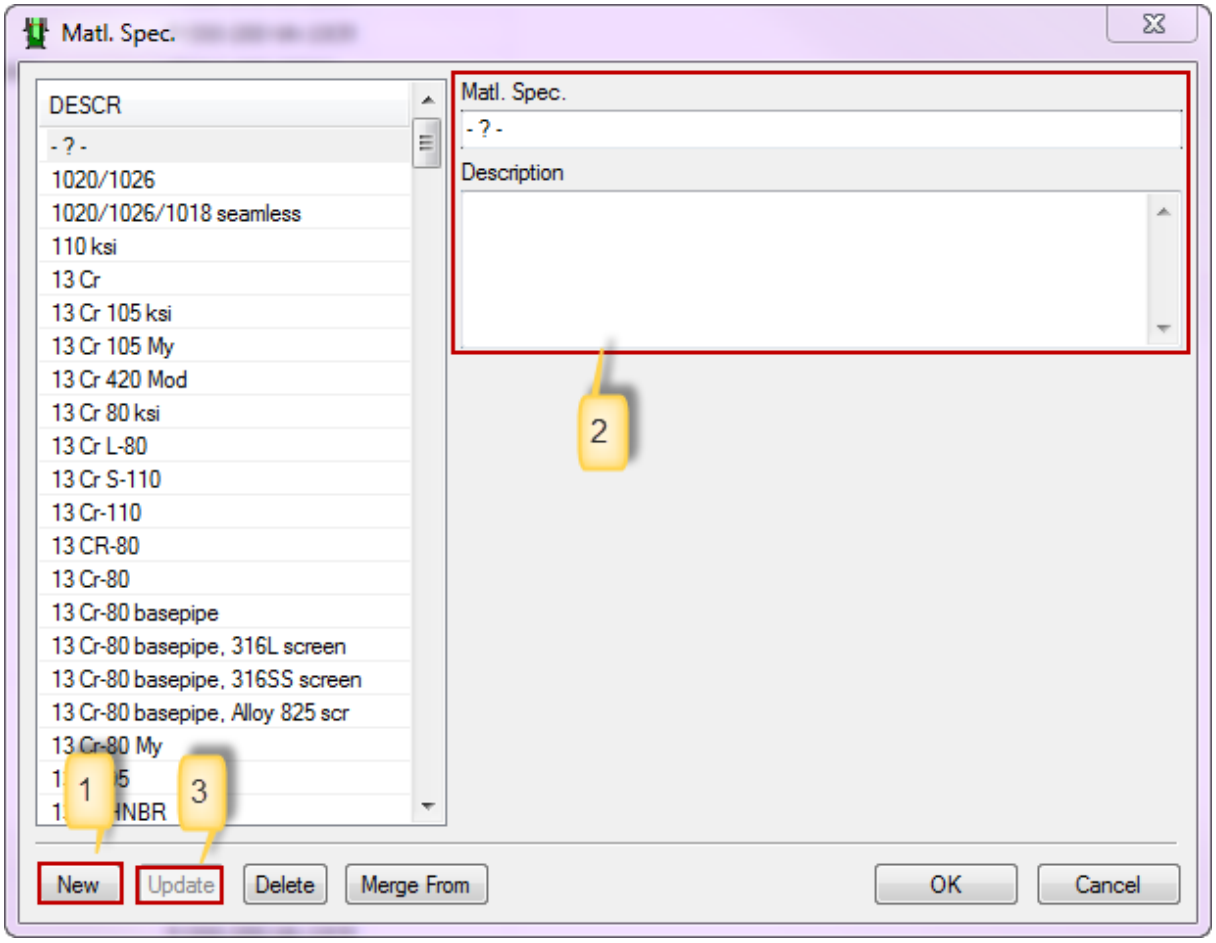
Topic	Description
Well	Registering well names. Ordinary users cannot define well names themselves, so this becomes one of the most important code table to maintain. When a new well is defined, CSD automatically defines a well bore named Wellbore1
Rig	Registering rigs/platforms and used in General Data
Rig Datum	Assign one or more datum references to a rig
Status	Registering different types of status, like Oil Producer, Water Injector and Gas Producer. Used in General Data
Manufacturer	Registering manufactures used in Part
Supplier	Registering suppliers used in Part
Threads	Registering threads used in Part, Casing and for thread-checks
Matl. Spec.	Registering material specifications (grade)
Threads OD Top	Registering nominal size of Threads Top. Used in Part and for scaling of XO symbol
Threads OD Bottom	Registering nominal size of Threads Bottom. Used in Part and for scaling of XO symbol
Well Head	Registering X-mas tree, surface well head and subsea well head. Used in X-mas tree
Formation	Registering geological formations and used in Formation and in Perforation
Perforation Gun	Registering different types of perforation guns and used in Perforation
Control Line Type	Registering different types of control lines and used in Control Line
Clamp type	Registering different types of clamps. Used in Item Properties..., Clamps/Bandits
Bandits type	Registering different types of bandits. Used to define Bandit in Item Properties... , Clamp/Bandit
Cement Plug type	Register different types of cement plugs. Used in Cement Plug
Casing Attribute Type	Register different types of casing attributes, such as casing cement. Used in Casing Attribute
Check List	Register different check list items. **NOTE:** Should not be edited! CS personnel only

Topic	Description
Report Template	Edit or change default report templates. **NOTE:** Should be edited by the CSD team.
Dynamic Attribute	Manage Dynamic Attributes.

1.14.4.1 Update Code Table

All of the code tables follows a standard setup and how to update this.

Here; Material Specification is used as an example:



NOTE: By not pressing New, you risk to overwrite an existing Matl. Spec from the list.

1. Select New.
2. Write the Matl. Spec. name/code with its description.

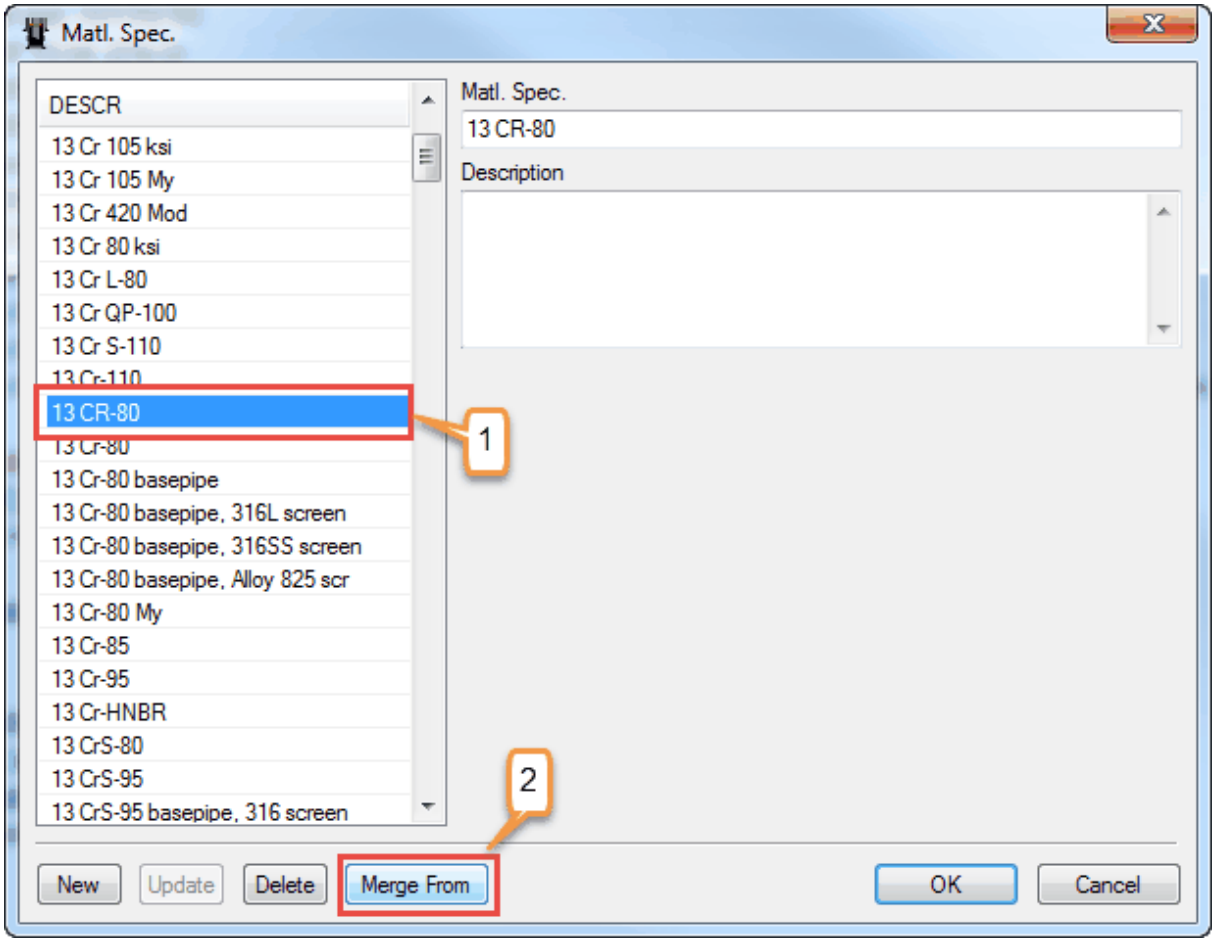
3. Press Update.

Tip! If you press New by a mistake, just press Close and the blank line will not be saved.

1.14.4.2 Merge Code Table items

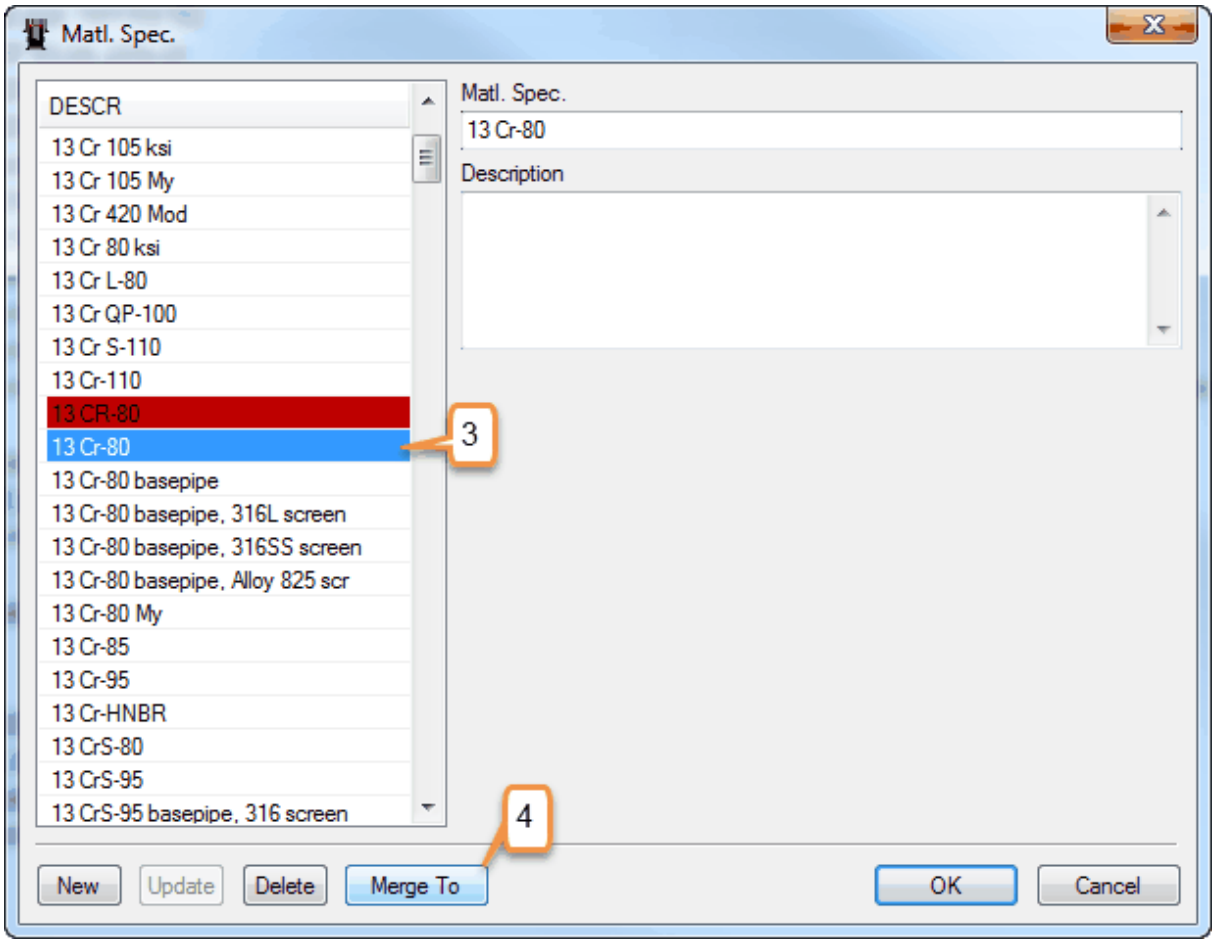
If you want to clean up duplicate or similar values in a Code Table column, you should use the Merge functionality.

NOTE: In most cases CSD will not allow you to delete any entries in the Code tables. You should use the merge functionality instead, to clean up the list.



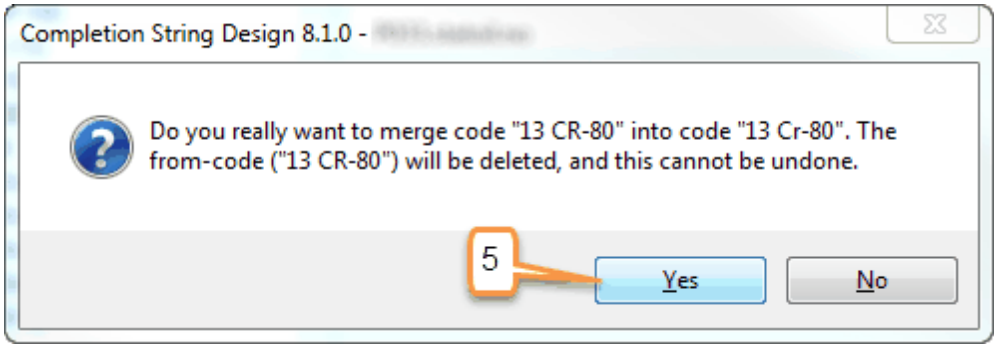
1. Highlight the item you want to merge into another item.

2. Press Merge From.



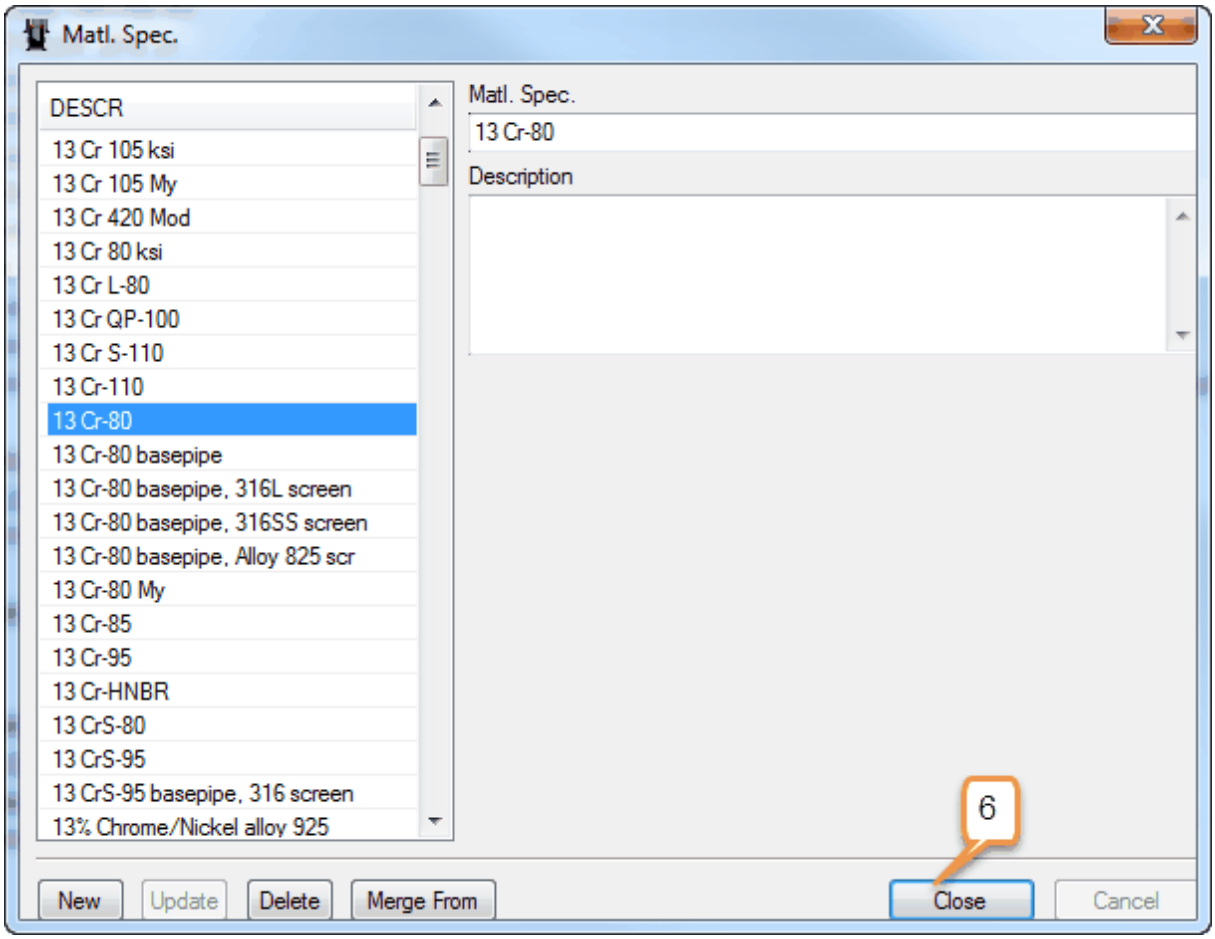
3. Chose the item you want to merge into.

4. Press Merge To.



5. Press Yes to proceed with the merge, or No to cancel.

6. Wait a few seconds for the merge to succeed, then press Close.
   The two instances have now been merged in to one.

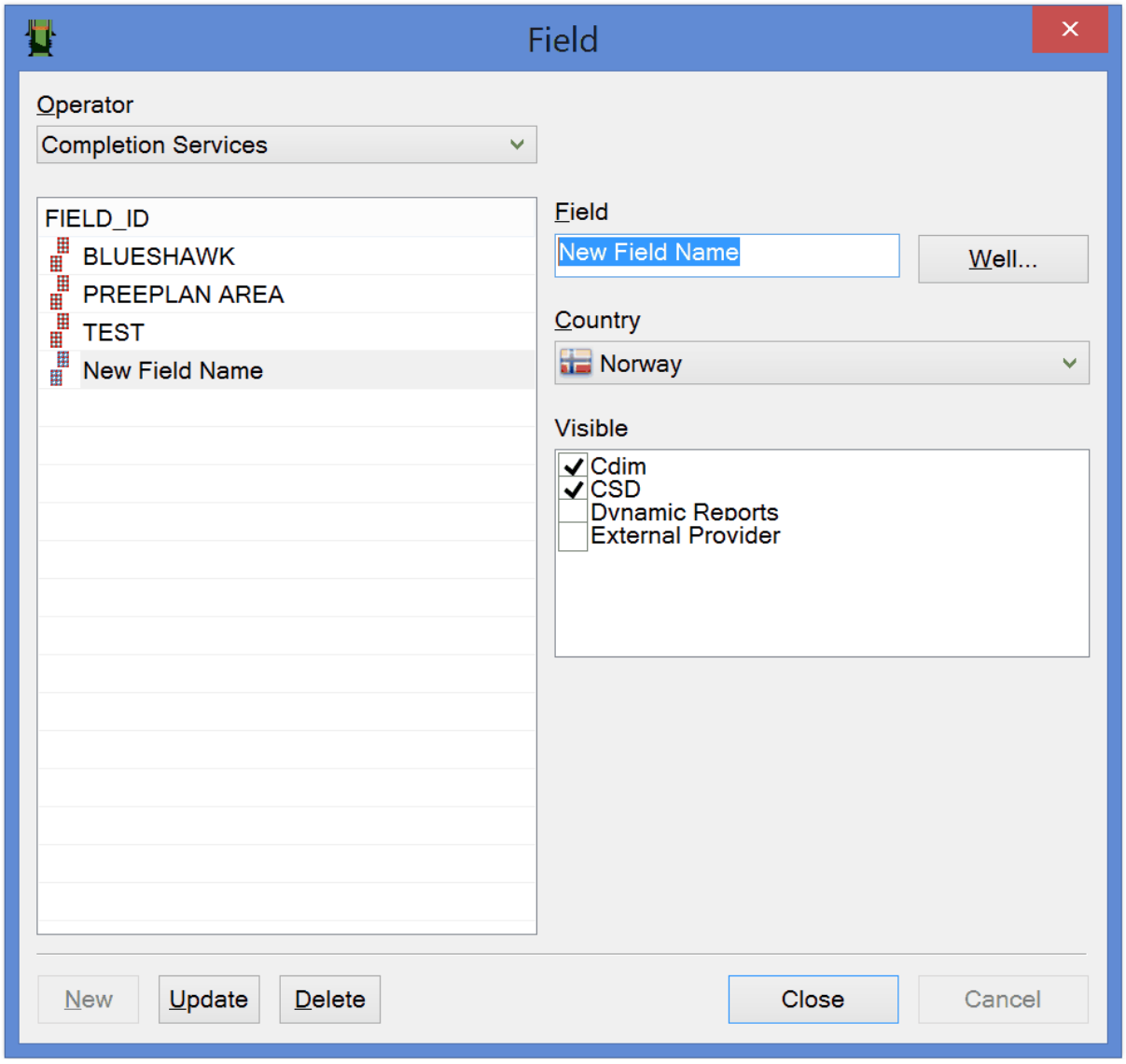


1.14.4.3 Field - Code Tables

All the fields in CSD have to be predefined by a System Administrator, before you can create an underlying well.

Create a new field

In the CSD top menu; choose Database, Code Tables, Field.



1. Choose the operator from the Operator dropdown.
2. Press New.
3. Type in the field name in the Field input field.
4. Choose country from the Country dropdown.
5. Choose if the field should be visible or not in CSD and Cdim (CSD Web). This is done in the Visible pane. Note that this list can vary in your company.
6. Press Update.

NOTE: The Well button takes you to the Code Tables, Well dialog.

Edit an existing field
Highlight one field in the list. Edit the information and press Update.

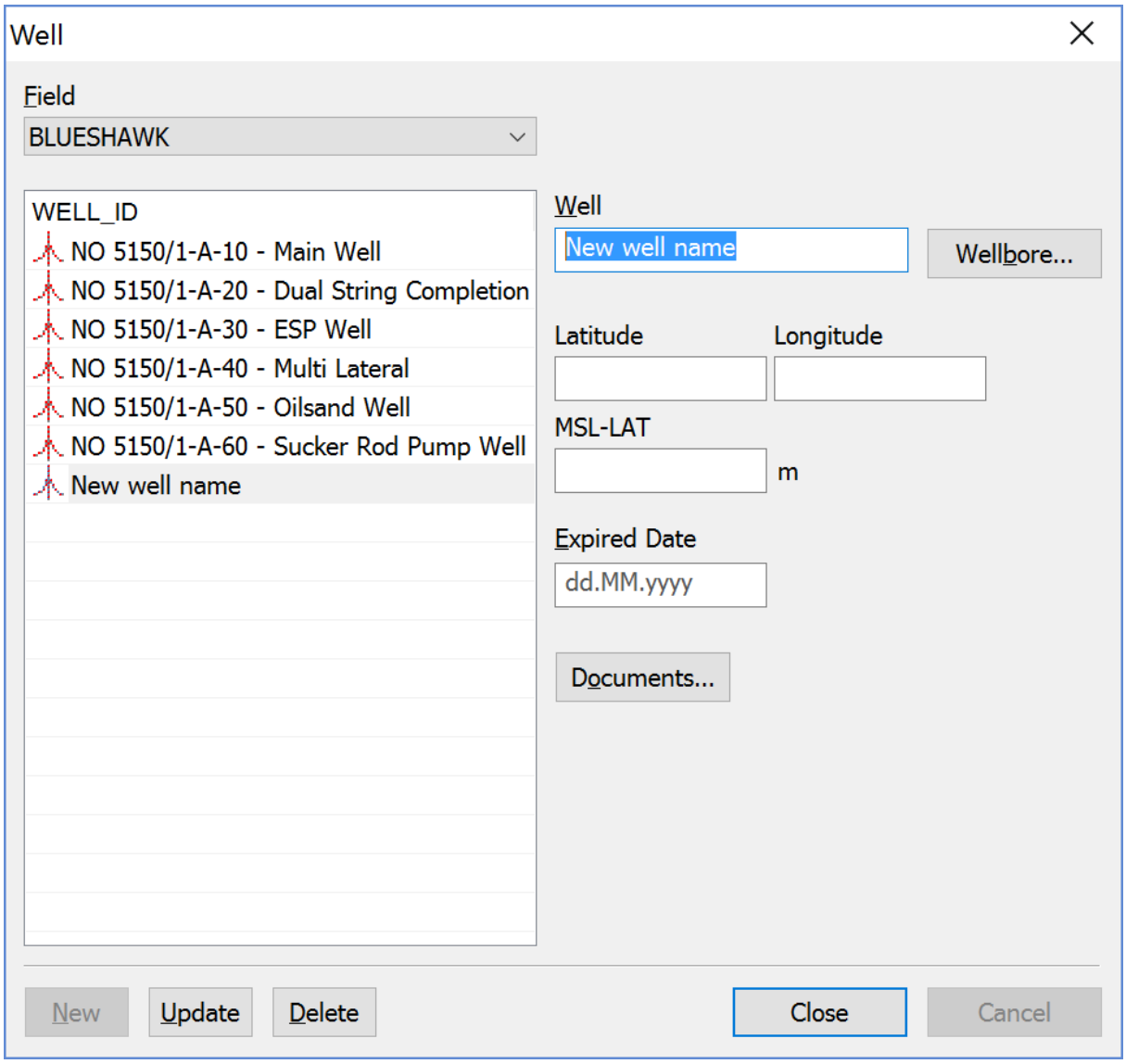
Delete a field
Push the Delete button after highlighting a field in the list.

1.14.4.4 Well - Code Tables

- All the wells in CSD have to be predefined by a System Administrator, before you can save a new completion drawing on it.
- If you cannot find the correct field in the dropdown list, or if it is a new field, this must be created first.

Create a new well

In the CSD top menu; choose Database, Code Tables, Well.



1. Choose the correct field from the Field dropdown.
2. Press New.
3. Type in the well name in the Well input field.
4. Press Update.

The Wellbore button opens the Code Tables, Wellbore dialog.

The Documents button opens the Well Document folder.

Input	Description
Latitude / Longitude (Optional)	Enter position coordinates. Format: DDD° MM' SS.S" (Degrees, Minutes and Seconds) + compass direction. I.e: 32° 18' 23.1" N 122° 36' 52.5" W. This will not show graphically in CSD.
MSL-LAT (Optional)	You may enter the MSL (Mean Sea Level) to LAT (Lowest Astronomic Tide) value.
Expired Date (Optional)	You may enter an expired date, to prevent the field to show in CSD.

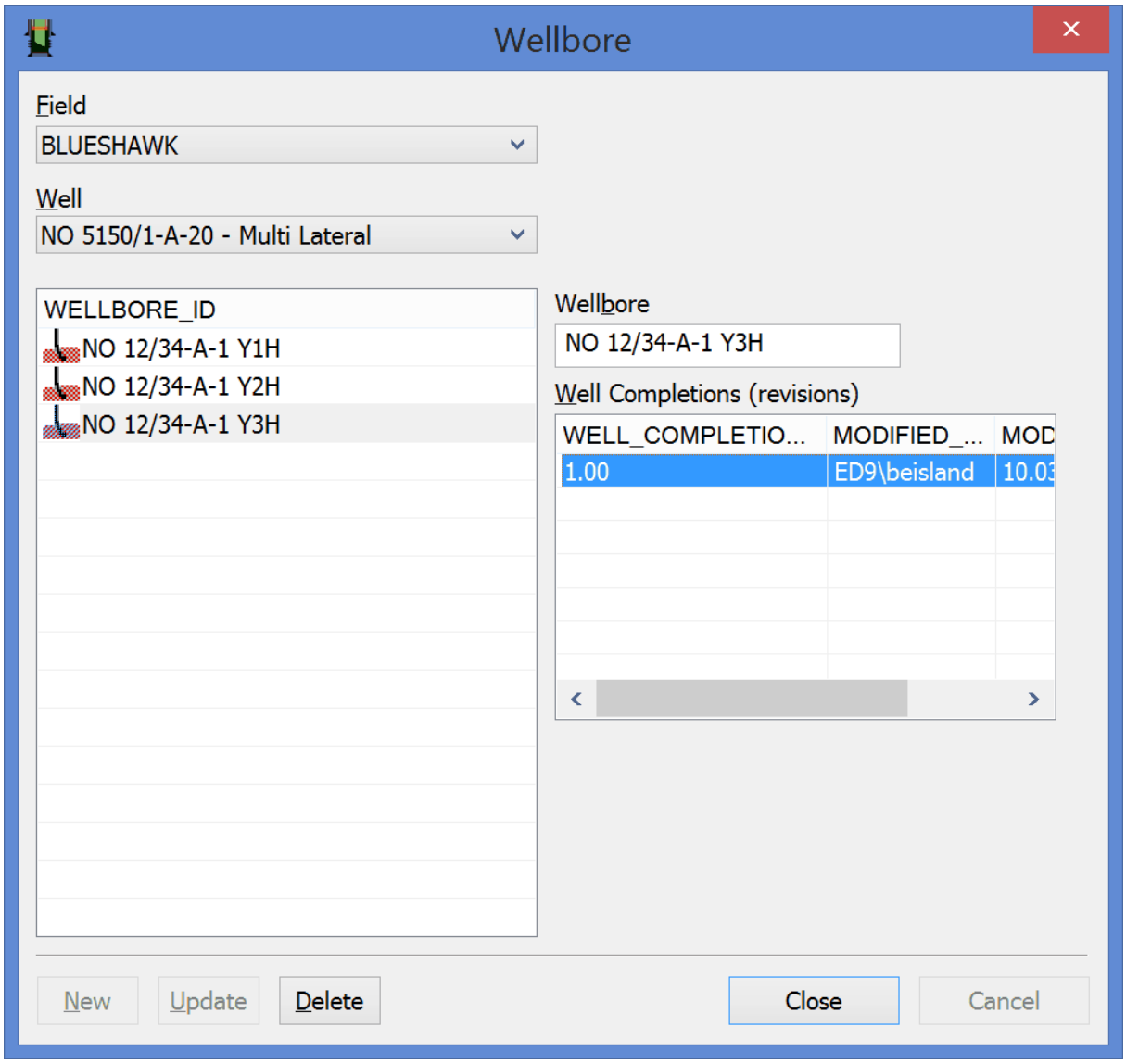
Edit an existing well
Highlight one well in the list. Edit the information and press Update.

Delete a well
Push the Delete button after highlighting a row in the list.

NOTE: A wellbore is created when you save a new completion schematic on this well.

1.14.4.5 Wellbore - Code Tables

This dialog shows all the wellbores connected to one well, and all the revisions of the well completion, as well as Modified By, and Modified Date.



You can edit the wellbore name, by changing the name in the Wellbore input field, then press Update.
The Delete button enables you to delete a wellbore. You should be careful deleting a wellbore, and be absolutely sure before doing so.

NOTE: You are not able to create a wellbore using this dialog, as wellbores are created when you first save a well schematic to a new well.

1.14.4.6 Dynamic Attributes

How to add dynamic attributes

A. For mandatory values

1. Open CSD, (you do not need to open any well), and go to Database, Code Tables. Then proceed to Dynamic Attribute…

2. Let us take an example. We want to add Nominal OD as a dynamic attribute to the Latch symbol, meaning that all Latch equipment can then register Nominal OD as a part property. Press New, and name the dynamic attribute "Nominal OD", as shown in Figure 1. Select Inserted Equipment, then Latch, under Symbols, as shown in Figure 2.

3. Furthermore, we have predefined and given options for the nominal OD; 1”, 1 ½” and 1 ¾”. Thus these are mandatory. Select Enabled and Mandatory. Thus, **these 3 options can ONLY be modified and selected when creating a part in CSD**. In other words, existing parts cannot be modified. Add the 3 options under Valid Values by clicking on the **folder icon**. Furthermore, select String in Data Type, for drop down choices. Leave Unit Measure Quantity blank. All is shown in Figure 3.

4. Finally, remember to click Update before proceeding to Close.

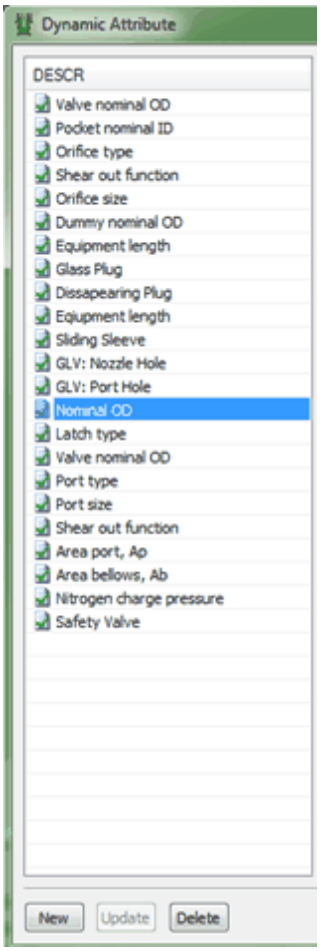


Figure 1. Here we have added the dynamic attribute.

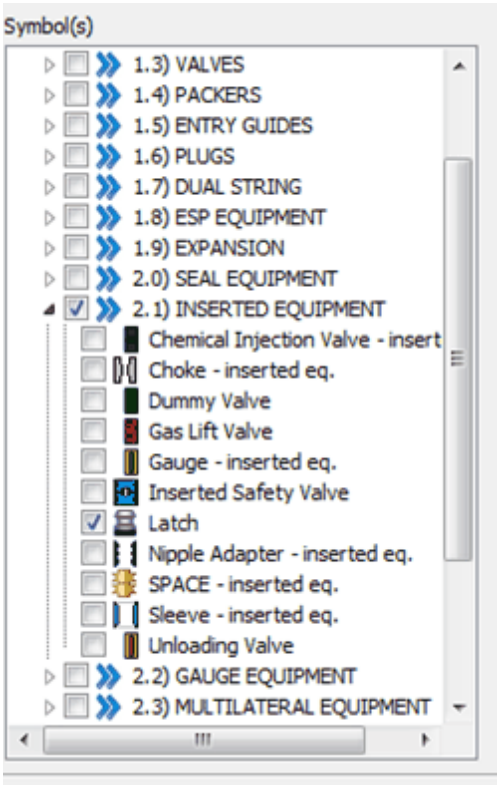


Figure 2. Here we select the corresponding symbol.

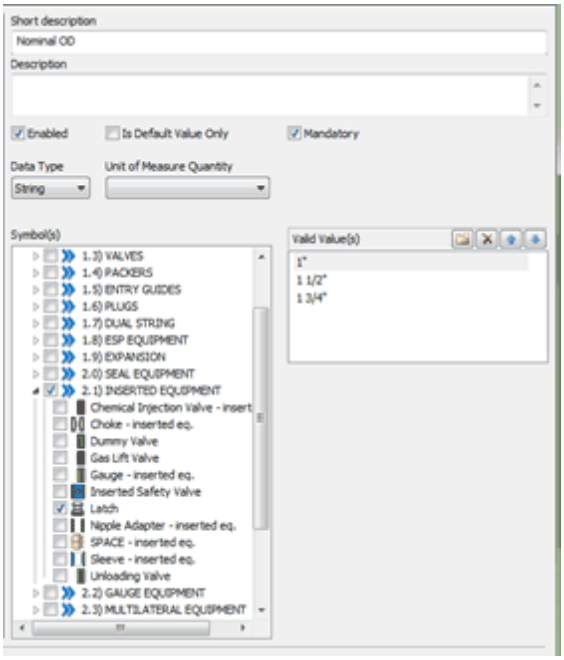
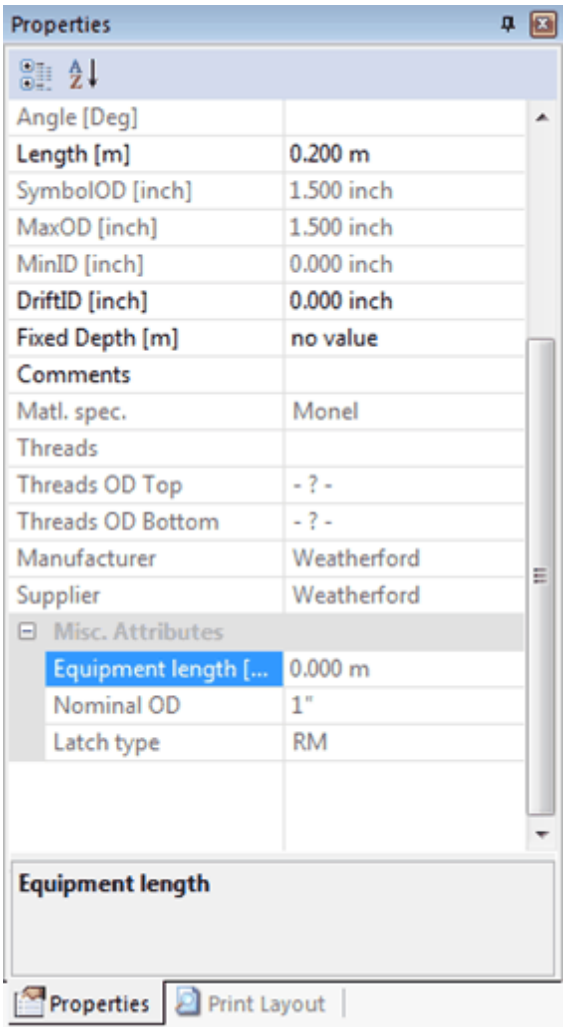


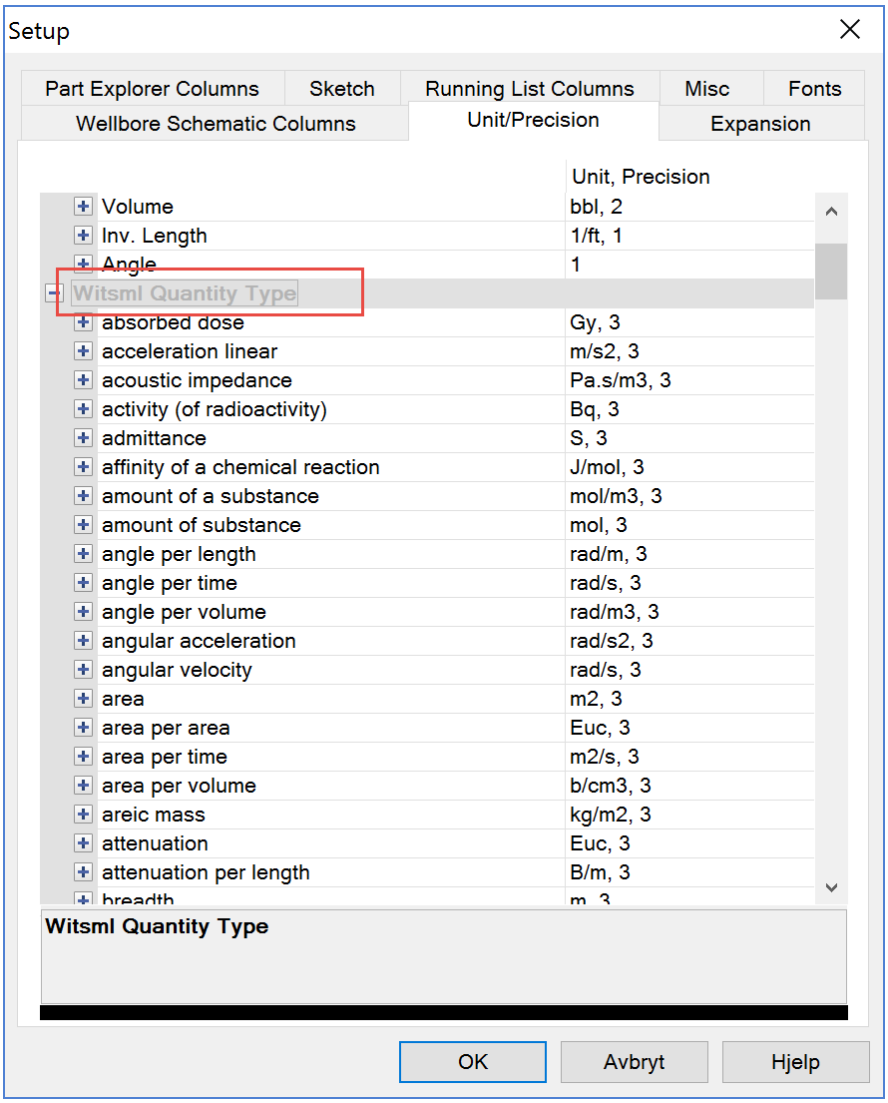
Figure 3. The final step.

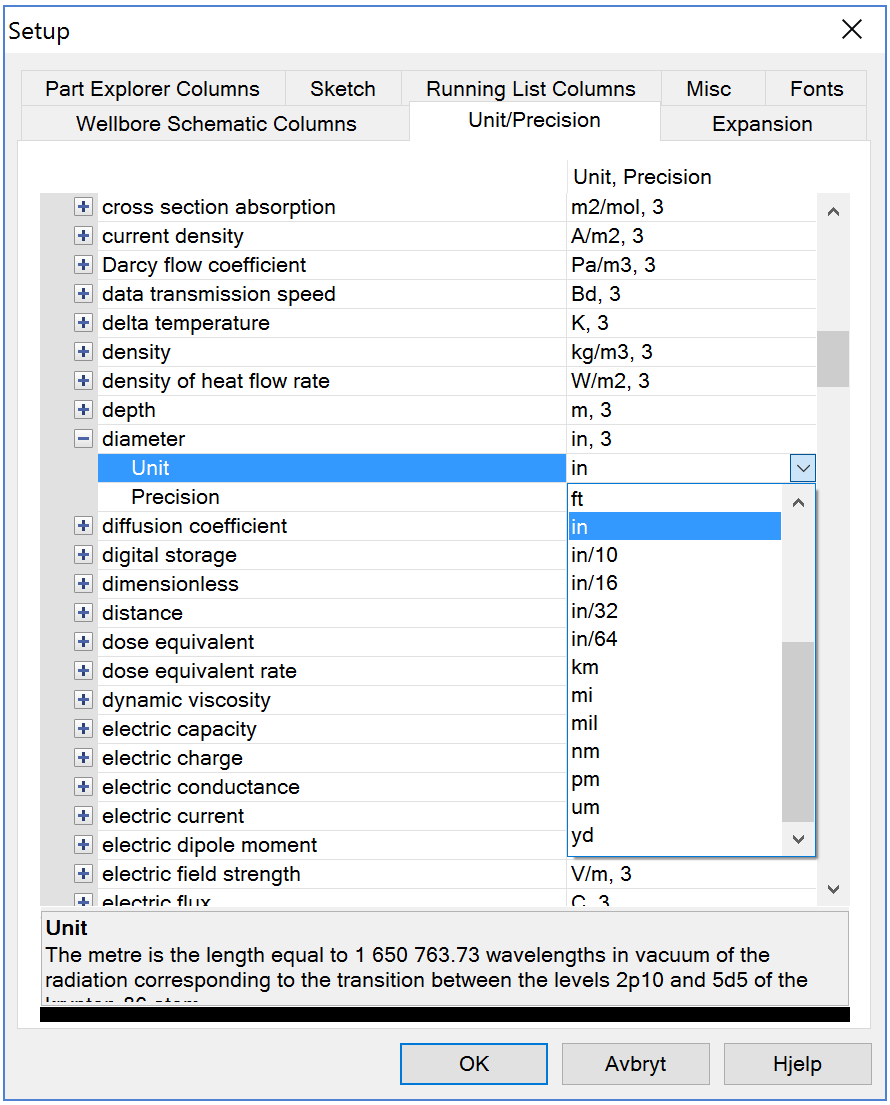


After performing the steps from section A, this is how the Properties toolbox should look like when using an existing part, in this case a Latch.

Change units

To change the units in the Dynamic Attributes properties, go to Options, Setup, then choose the Unit/Precision tab and scroll down to Witsml Quantity Type.


Setup
Part Explorer Columns
Sketch
Running List Columns
Misc
Fonts
Wellbore Schematic Columns
Unit/Precision
Expansion
Unit, Precision
Volume
bbl, 2
Inv. Length
1/ft, 1
Angle
1
Witsml Quantity Type
absorbed dose
Gy, 3
acceleration linear
m/s2, 3
acoustic impedance
Pa.s/m3, 3
activity (of radioactivity)
Bq, 3
admittance
S, 3
affinity of a chemical reaction
J/mol, 3
amount of a substance
mol/m3, 3
amount of substance
mol, 3
angle per length
rad/m, 3
angle per time
rad/s, 3
angle per volume
rad/m3, 3
angular acceleration
rad/s2, 3
angular velocity
rad/s, 3
area
m2, 3
area per area
Euc, 3
area per time
m2/s, 3
area per volume
b/cm3, 3
areic mass
kg/m2, 3
attenuation
Euc, 3
attenuation per length
B/m, 3
breadth
m, 3
Witsml Quantity Type
OK
Avbryt
Hjelp



B. For non-mandatory values

In this section we will use Gas Lift Valve as an example. We want to add orifice type as a dynamic attribute to all Gas Lift Valves.

1. Repeat 1) and 2) (keeping in mind that we are regarding Gas Lift Valves)

2. We want to add Orifice Type as a dynamic attribute. This has default values as followed *Orifice* and *Venturi*. Select Enabled and Is Default Value Only. Thus, **these 3 options can be modified and selected when creating and using an existing part**. Add the 2 options under Valid Values, by clicking the **folder icon**. Furthermore; select String under Data type, for drop down choices. Leave Unit Measure Quantity blank. All is shown in Figure 4.

3. Since these are default values and not mandatory, it is possible to add a third option as seen in figure 4. It is not always the case that orifice types would be available for all gas

lift valves. Choose this option too for a similar matter.

4. Finally, remember to click Update before proceeding to Close.

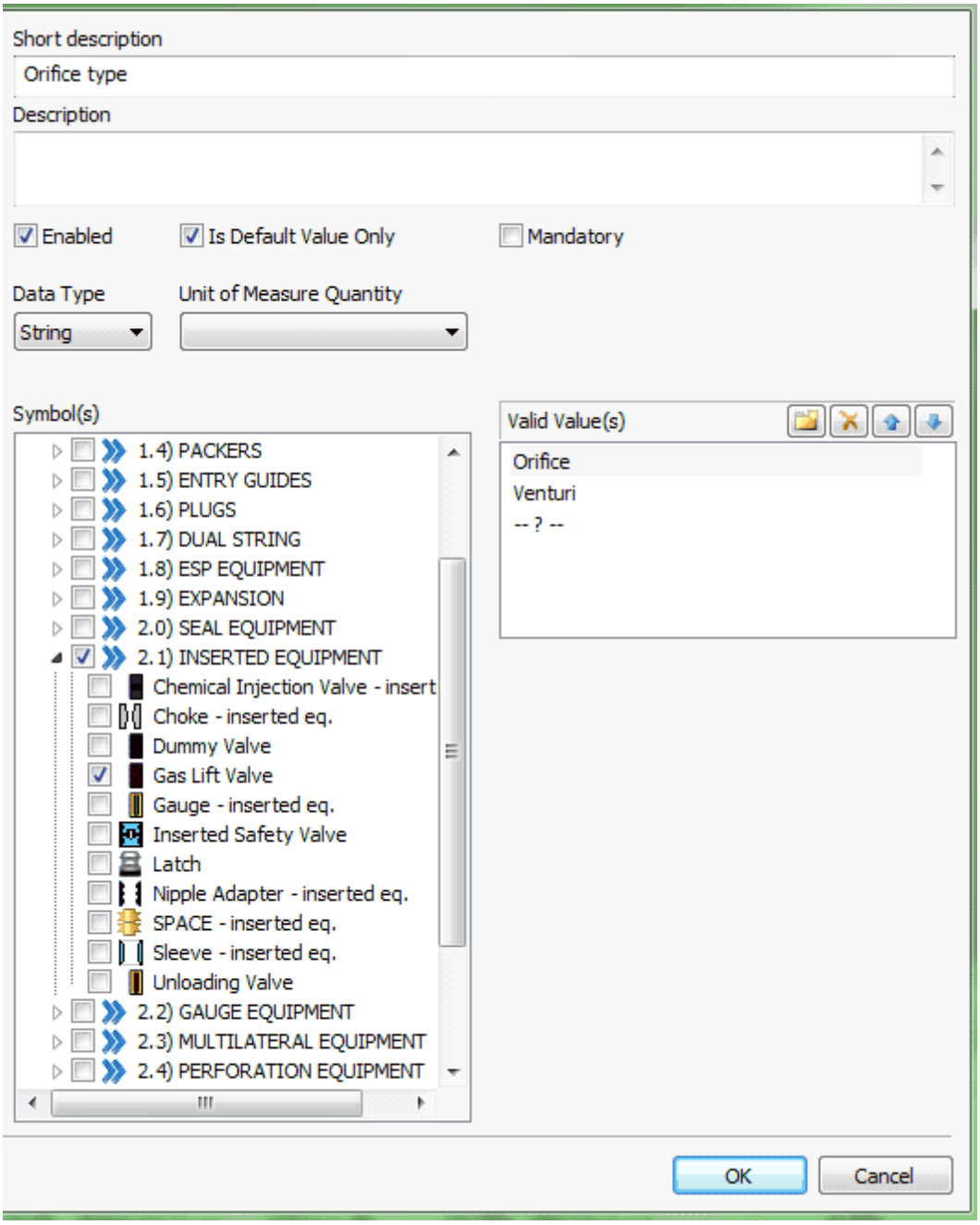


Figure 4. For default values.

C. For numeric values

1. Repeat 1) and 2) as above. This is still regarding Gas Lift Valves.

2. We want to add Orifice size this time. This is a number with diameter as unit. Select Enabled and Is Default Value Only. Thus, the numeric values can be modified and selected when creating and using an existing part. Add the values under Valid Values by clicking on the **folder icon**. Furthermore; select Double under Data type, for drop down choices. Proceed to select Diameter under Under measure Quantity. All Is shown under figure 5.

3. Finally, remember to click Update before proceeding to Close.

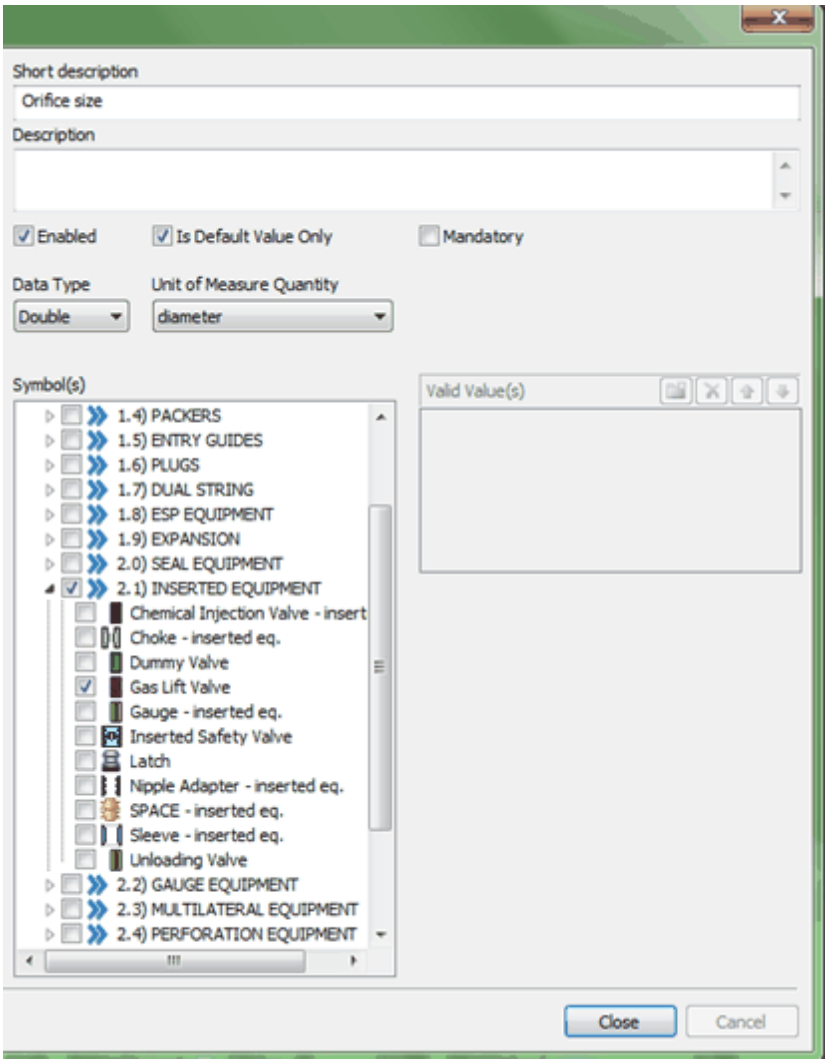
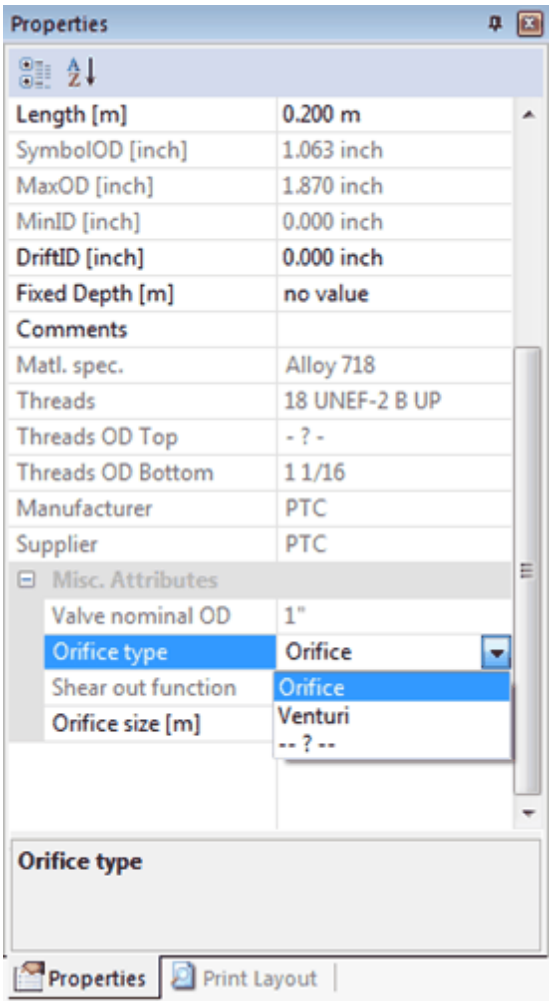
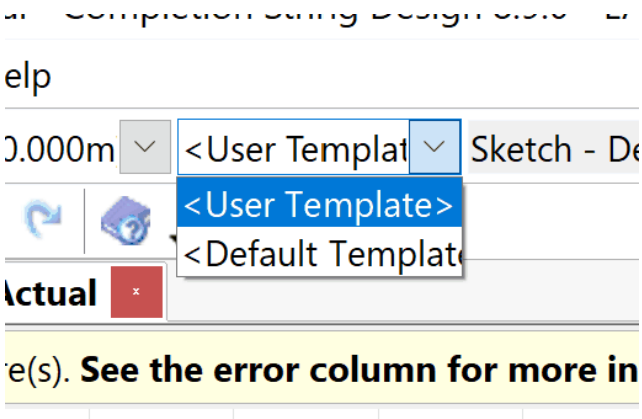


Figure 5. For numeric values.



Here we see a mixture of default values with a drop down menu, mandatory and numeric values. An existing Gas lift Valve is used as an example.

1.14.4.7 Report Template



The Report Templates in CSD defines the number and order of columns shown in the Schematic view. It is based on XML templates, and should be configured by the CSD team only. The default CSD setup includes two templates:

User Template

This is the template used when opening CSD. It contains the default number and order of columns in the Schematic view.
If a user makes changes to the columns in the CSD client, this setup will be remembered on that same PC using registry storing of the setup.

Default Template

This template holds a different columns setup than the User Template. It could be edited as a company standard. It will also define the Schematic format for the CSD Web. This template must be chosen in the dropdown, after CSD is started.

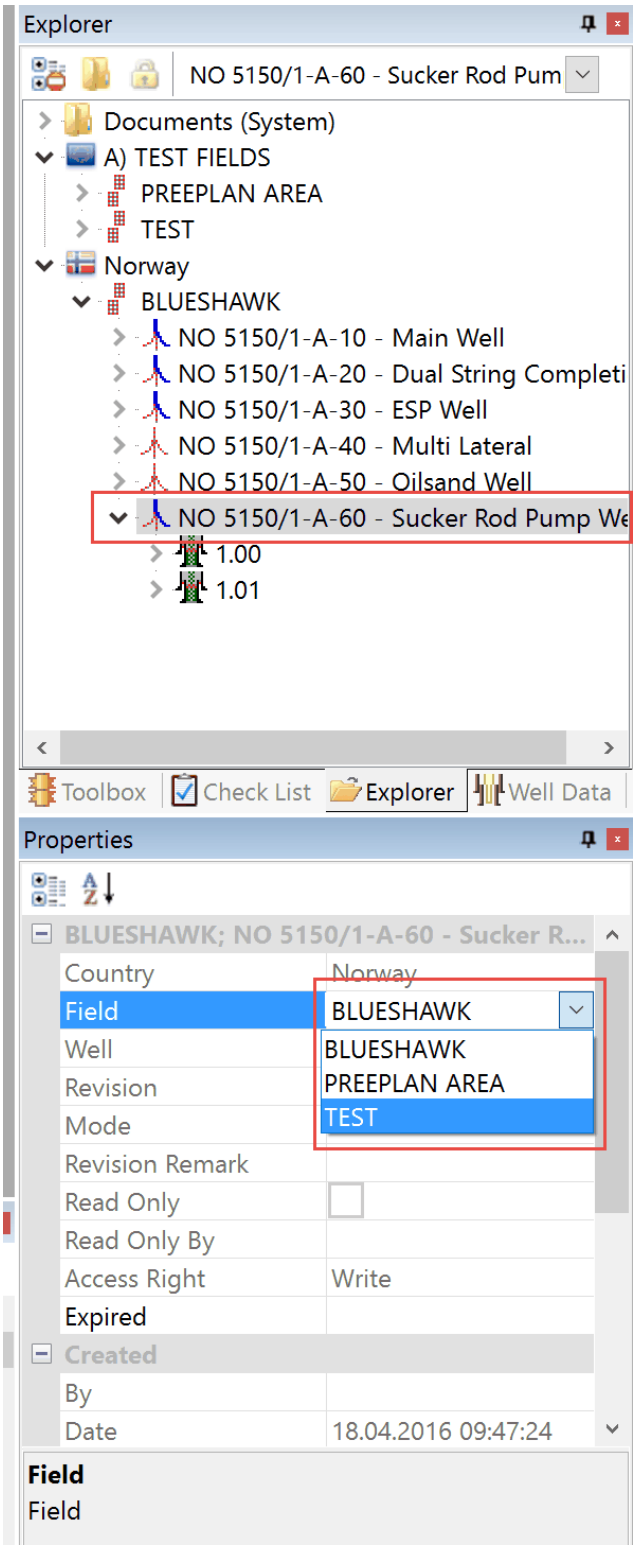
1.14.5 Move a Well

The System Administrator is able to move a well from one field to another. This is done in the Explorer and Properties tabs.

1) In the Explorer tab: Mark the well you want to move to another field.

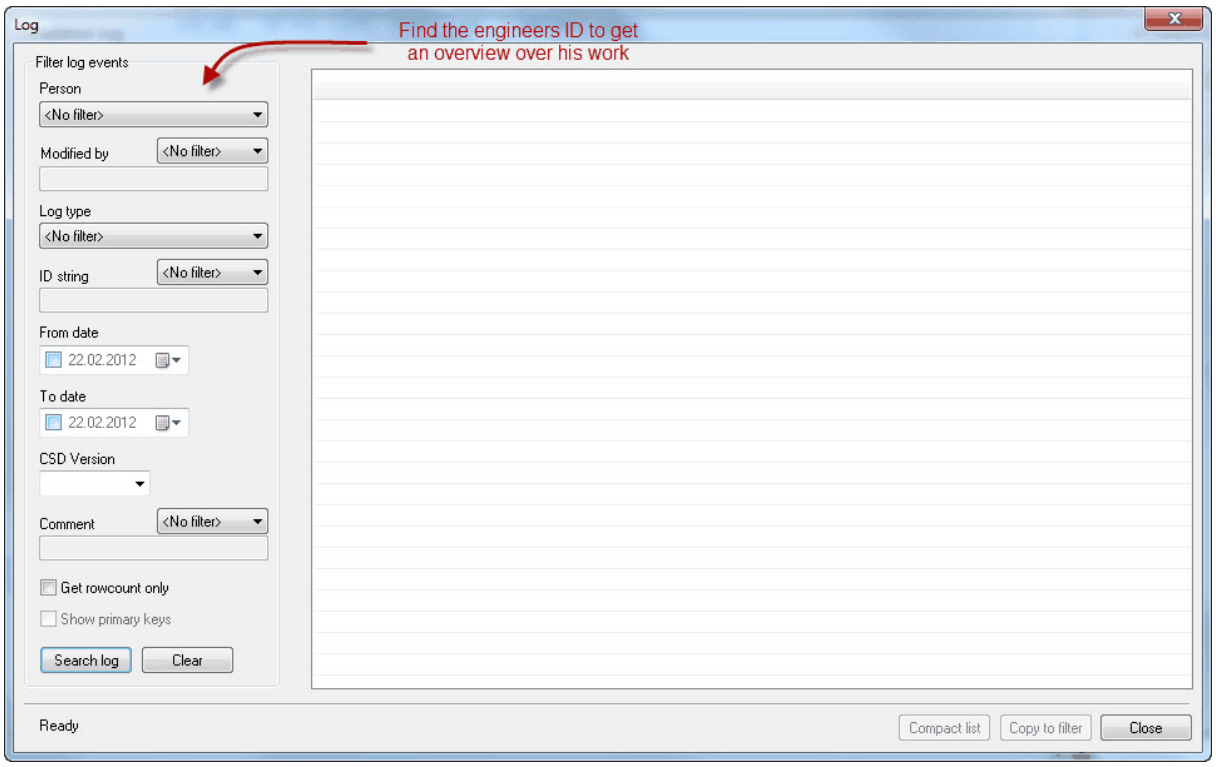
2) In the Properties tab: Go to the Field section and choose the new field from the dropdown.

3) Choose Yes to move or No to abort.


Explorer
NO 5150/1-A-60 - Sucker Rod Pum
Documents (System)
A) TEST FIELDS
PREEPLAN AREA
TEST
Norway
BLUESHAWK
NO 5150/1-A-10 - Main Well
NO 5150/1-A-20 - Dual String Completi
NO 5150/1-A-30 - ESP Well
NO 5150/1-A-40 - Multi Lateral
NO 5150/1-A-50 - Oilsand Well
NO 5150/1-A-60 - Sucker Rod Pump We
1.00
1.01
Toolbox
Check List
Explorer
Well Data
Properties
BLUESHAWK; NO 5150/1-A-60 - Sucker R...
Country
Norway
Field
BLUESHAWK
Well
Revision
Mode
Revision Remark
Read Only
Read Only By
Access Right
Write
Expired
Created
By
Date
18.04.2016 09:47:24
BLUESHAWK
PREEPLAN AREA
TEST
Field
Field

1.14.6 Log Database

The Log database is used to get an overview over which people who have been modified and worked on the different well schematics. You can find information about which fields and which wells specific engineers have been involved in. This is an easy way for managers to have control over the work done by engineers on the different well schematics.



You'll find the Log in CSD under Options, Log. If you want to search after work done by a specific engineer you go further to 'Advanced...' as you can see in the figure above. As you can see there are a lot of search parameters you can use to find the right information.

1.14.7 File Recovery - XML import

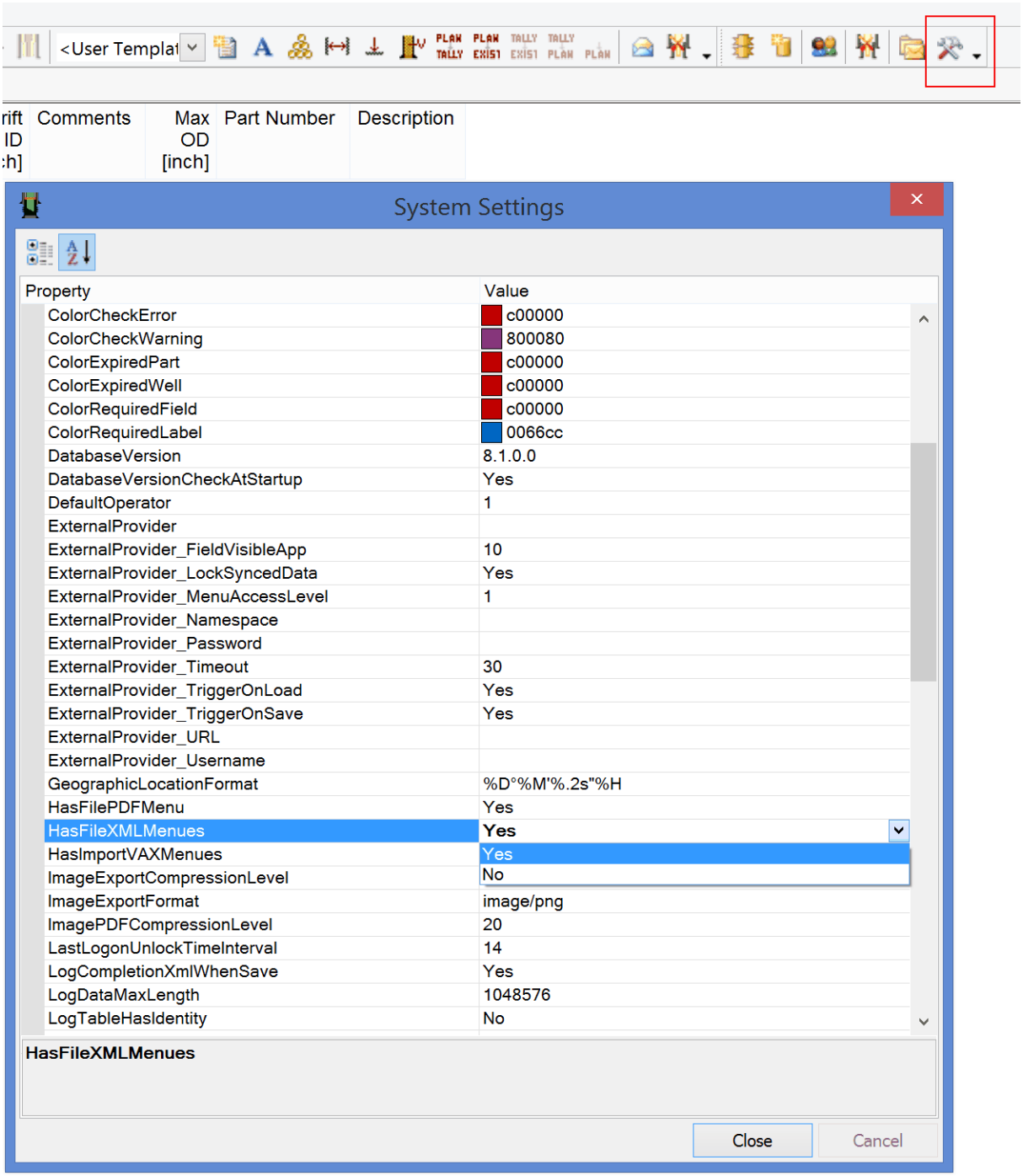
If you for some reason want to recover a previous version of a completion drawing, this is also done in the Log dialog.

In the Advanced mode; select person and choose Log Type= Completion Save Select the time-span and press Search Log. Locate the well completion / mode that you want to recover. Then double click on the row and save the xml file on your PC. Open a blank well completion (File, New). Then choose File, Open File..., select the recovered xml file and press Open. Then save the recovered well completion at the correct Field and Well, containing the correct revision number.

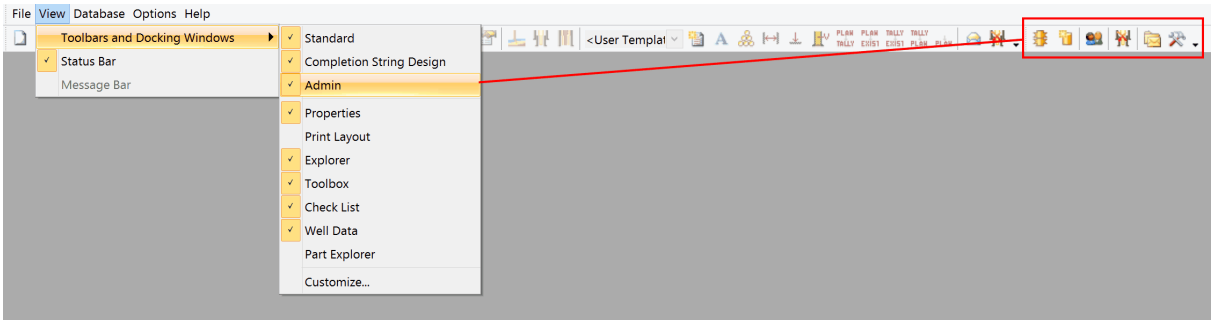
Restore a deleted wellbore - step by step

NOTE: You must have the System Administrator role in CSD to be able to do this, also the wellbore must have been saved at one time to be restored from the database.

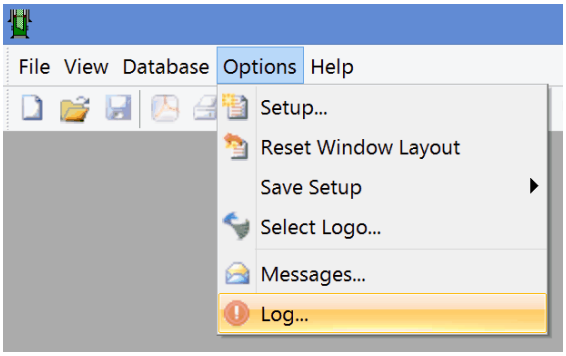
Before you start, make sure that you have the import XML file menu item enabled. Press the System Settings button showed below, and set the HasFileXMLMenues option to Yes. Then restart CSD.

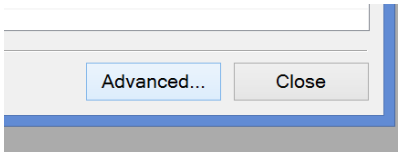


TIP: If you don't see the Admin toolbar in at the top of CSD, you should enable it from View, Toolbars and Docking Windows, Admin.

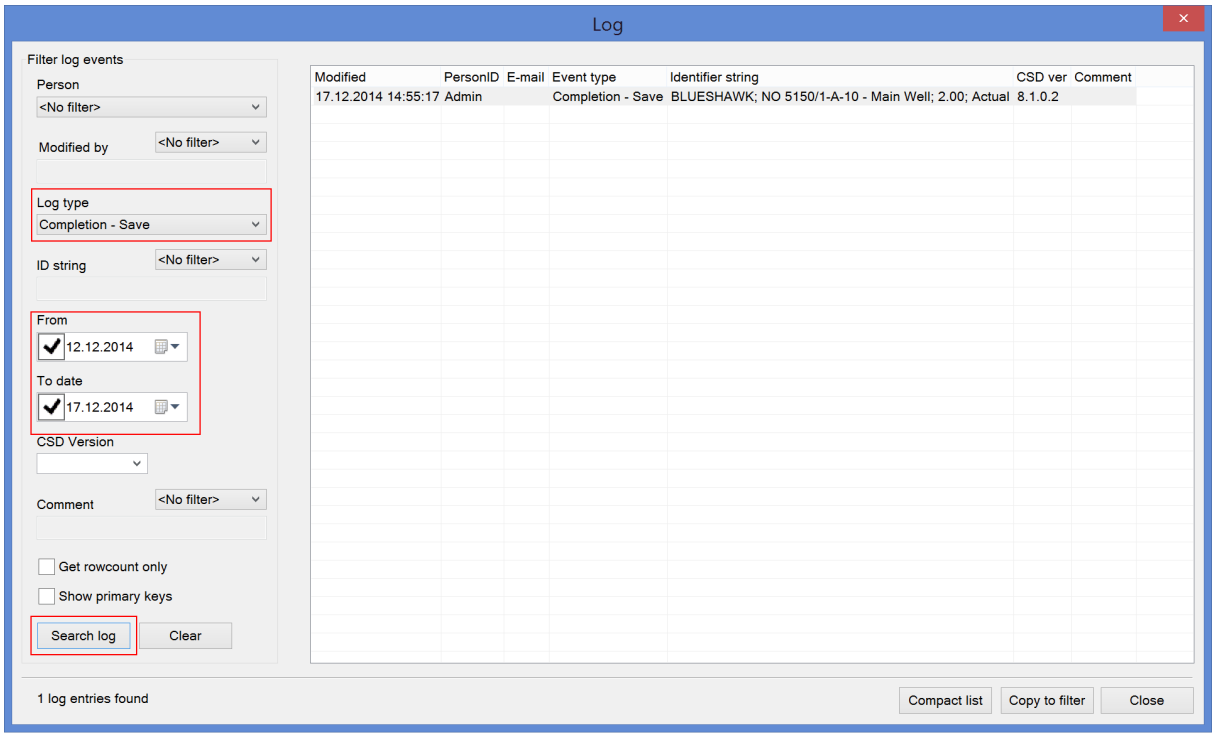


Choose Options, Log… from the CSD top menu, to open the Completion Log dialog. Press the Advanced button at the lower right to open the extended log dialog.



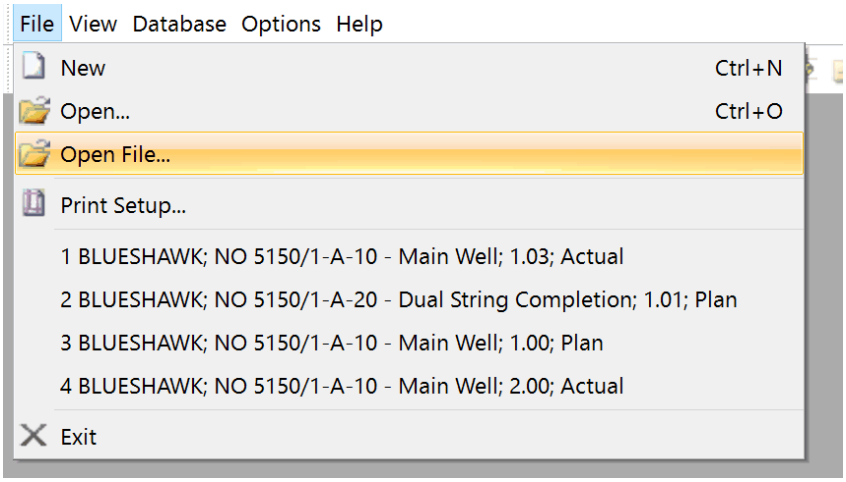


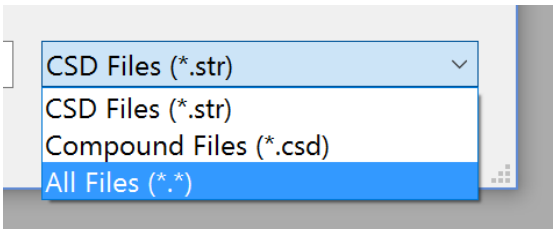
Choose Log type: "Completion – Save" or "Completion - Save As". Set the search criteria From & To date and press Search log.



Double click on the latest saved revision found in the list (the one you want to restore), and save it on your PC as an XML file. Then close the Log dialogs.

In the CSD top menu; choose File, Open File... (hidden if HasFileXMLMenues = No). Then browse to the directory where you saved the XML file and choose All Files (*.*). Then mark the XML file and push Open. Then save the restored completion to the correct well in CSD.

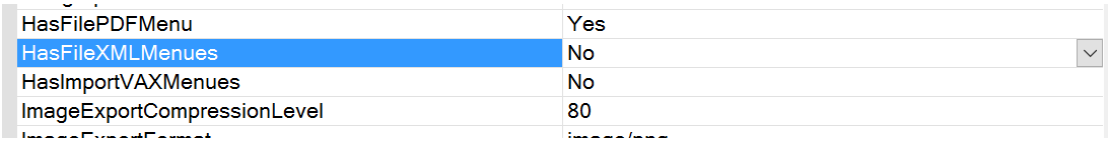




Alternatively: In the CSD main screen; choose File, New for a blank page. In the top menu, choose Data, Import (XML)… and browse to the XML file you previously saved. Press Open, than OK.

NOTE: In case of importing **multilateral wells**, choose the desired wellbore in the Wellbore(s) drop down, before pressing OK.

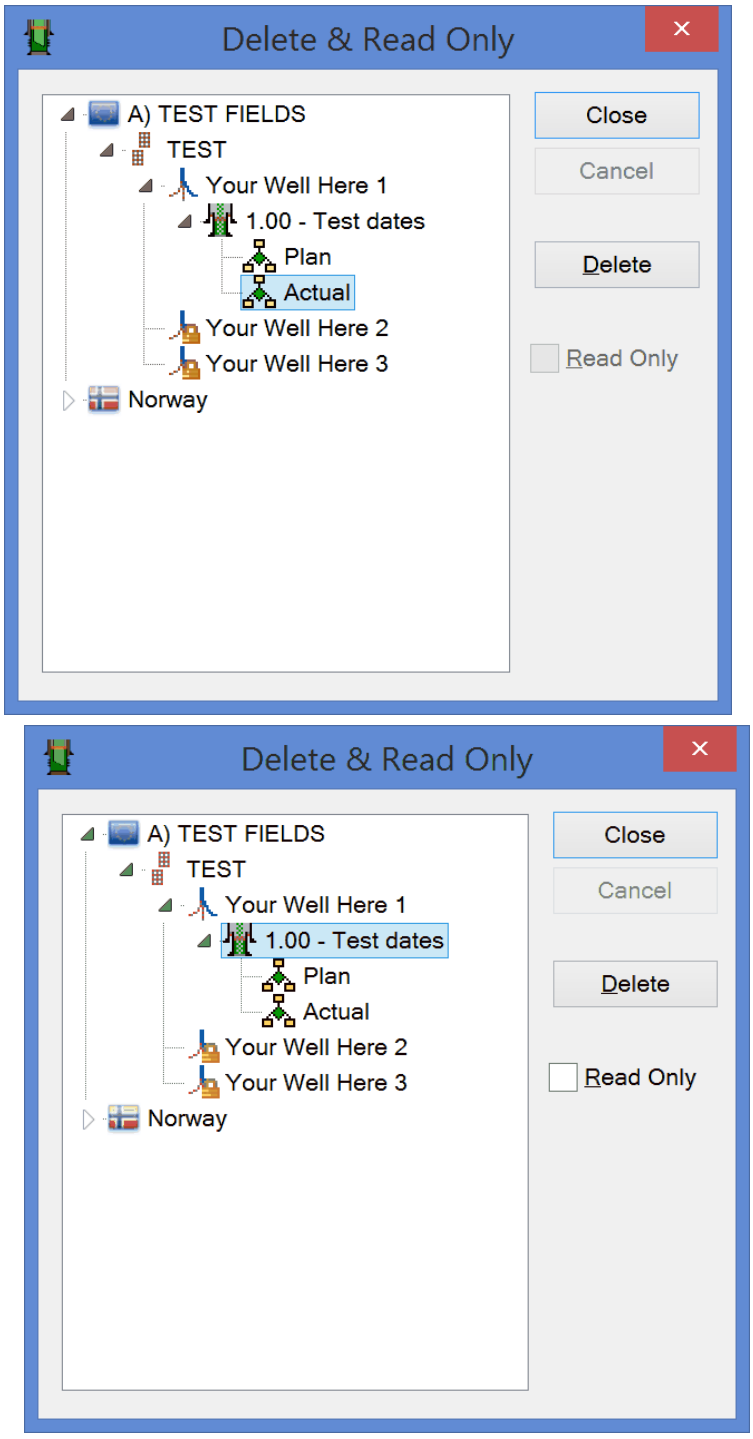
After restore: Remember to reset the HasFileXMLMenues option to "No" in System Settings.



1.14.8 Delete & Read Only

If you need to delete a schematic revision go to Database, Administration, Delete & Read Only... Mark the item you want to delete; one revision (I.e. Actual) or the whole node (I.e. 1.00), and press Delete.

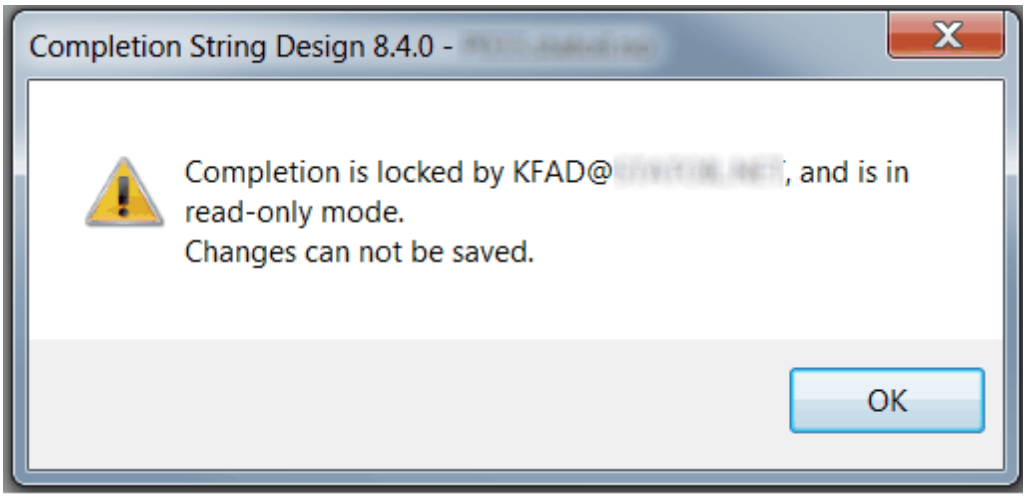
NOTE: If you delete a node such as 1.00 or 1.01, all underlying completion schematics will also be deleted.



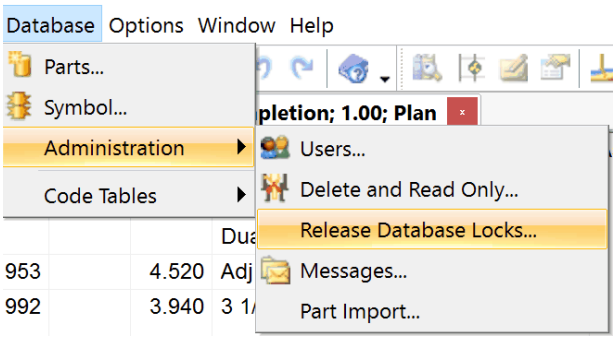
1.14.9 Release Database Locks

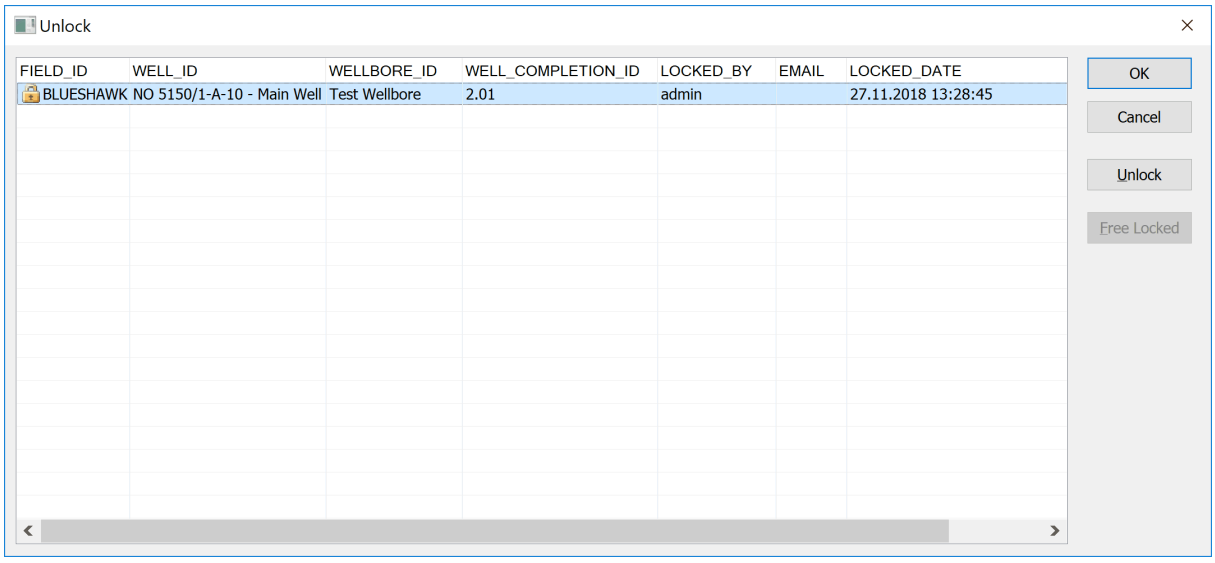
Sometime a completion revision is locked by another user, even if the user has closed the CSD application. This can be caused by network trouble or application unexpected shutdown.
In this case you will get a message when opening the completion drawing saying "Completion is

locked by XXXX, and is in read-only mode. Changes can not be saved."



A System Administrator can unlock the completion drawings from the CSD top menu: Database, Administration, Release Database Locks...
Click on a completion revision and press the Unlock button.





LOCKED_BY: The user-name of the person locking the well completion revision.

LOCKED_DATE: The date the well completion was locked.

Free Locked

This button can be enabled to release all the locks on the well completion drawings locked before the number of days (Value) set in the System Settings - LastLogonUnlockTimeInterval (P roperty).

1.14.10 Message To Users

CSD System Administrators are able to create, edit and delete CSD user messages.