ShipWeight Training Manual for 2019

Chapter	Comment
ShipWeight Overview	
Customizing the ShipWeight System Database	No need to customize the WBS if you want to use one of the standard WBS systems
Starting a New Project	See video 1 & 2
Customizing ShipWeight Project Options	See video 1 & 2
Setting Up Codes and Item Settings	See video 3 & 4
Enter Weight Data Manually	See video 3
Import of Weight Data	See video 4
Filtering, sorting and Change Data	See video 7
Getting Results and Output	See video 9
Quality Assurance	See video 15
Playground Area	See vide 10 & 11
Parametric Estimation	See video 12
Loading Conditions and Hydrostatics	See video 17 & 18
Phase Codes	See video 13
Permission Settings	See video 21
ShipWeight Plugins	See video
Crystal Reports	Only if student have Crystal Reports designer tool and wants to make own templates

All videos found on www.shipweight.com in the “Videos” section

See proposed agenda on next page.

Proposed Agenda

Day 1

- ShipWeight overview
    - Technical overview of system and databases
- Customizing ShipWeight System Database
    - How to Create and Edit Work Breakdown Structure
    - Create Project Type Structure
    - Create Own Parameters
    - Create Parameter Views
- Starting a new project
    - Creating a new project from scratch, enter main parameters
    - Project administration functions; open, save, save as, delete. Project organization in folder structure.
- Customizing ShipWeight Project Options
    - Change labels, decimals and units
    - Change Main Window fields/columns
    - Set Project Properties
- Setting up custom codes and item settings
    - Define Custom Codes
    - Define Item Settings

Day 2

- Enter weight data manually
    - Navigating in the weight work breakdown structure (WBS), understanding the item window and its relation to the WBS.
    - Item History , deleted items
    - Manual input of weight data, related information, and learning about the quantity fields and their settings.
- Import of data
    - How to import from Excel. Looking at various ways of importing into ShipWeight. Understanding the basic import settings in the Data File Import window.
- Retrieving specific data in ShipWeight
    - Filtering of the ShipWeight data, simple and advanced filters. Finding a specific weight item. Learning how to use wild card. Storing filters.
    - Sorting of data in ShipWeight. Sanity check using sort.
    - Change values for multiple rows at once. Execute calculations on data in ShipWeight.
    - UnitWeight library using custom codes
    - Item Server library
- Getting Results and Output
    - Getting summaries and grouping Weight and CG.
    - Make, check and export a weight distribution curve.
    - Calculation of moment of inertia and radius of gyration
    - Exporting data and make project backups

    - Run simple Reports
- Quality Assurance
    - Find duplicate items and check for extreme values
    - Compare Weight Group levels
    - Run a Code Definition Check via Code Envelopes

Day 3

- Playground Area
    - Setting up a sandbox environment in ShipWeight, moving weight items into the playground area and back to the live database
    - Using the playground area as a net change log and approval tool
- Export to historical database
    - Learning the difference between a project and a historical vessel. Preparing a project for export to the historical database. Treating of remainders
    - Exporting to the historical database.
- Parametric Estimation in ShipWeight
    - Learning about parametric estimation
    - Creating your estimation methods
    - Standard deviation and uncertainty handling in ShipWeight
    - Estimation of “local” CG
    - Going from parametric estimation to follow-up

Day 4

- Loading Conditions
    - Loading Conditions using Loading Condition Window
    - Getting Hydrostatic Calculated
    - Defining Loading Conditions using Global Filters
- Phase Codes
    - Learn about the use of Phase Codes in ShipWeight
- Administration tasks in ShipWeight
    - Setting up users and user groups, giving permissions to users
- ShipWeight Plugins
    - Navisworks Plugin
- Performance issues
    - How to optimize speed and performance when working on large databases and/or slow networks

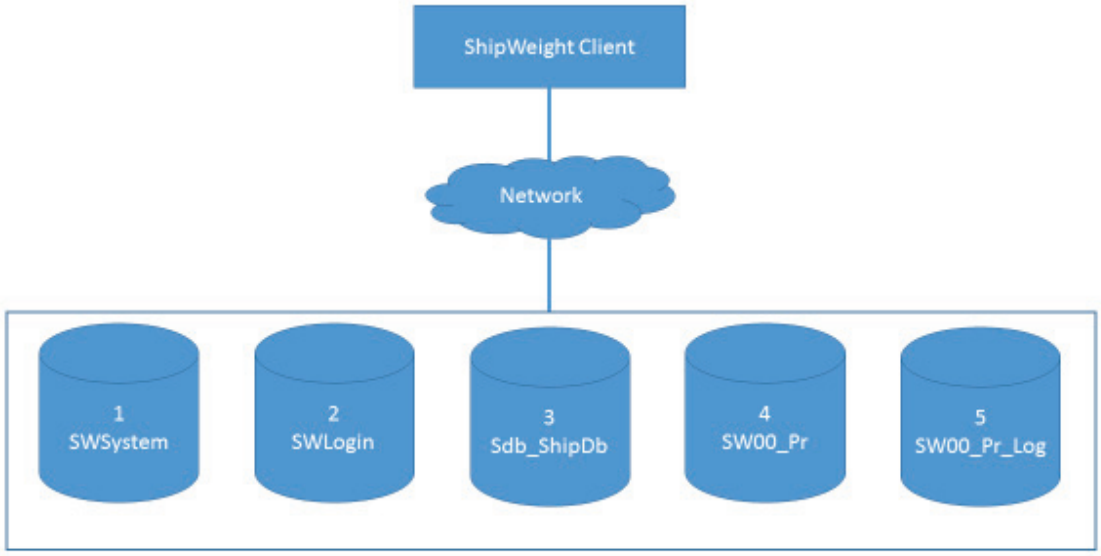
Day 5

- Reports in ShipWeight
    - Crystal Report in ShipWeight, how to create your own Reports

ShipWeight Overview

Technical and System overview

ShipWeight is a client-server application where the application runs local on your local machine, while the data is stored on a central SQL Server and shared between all users. Any number of client machines can access the same data, and users can work simultaneously on the same data. ShipWeight has at least 5 different databases in use. Some data is project related and some data is shared between all projects. This is outlined below.



1. The **SWSystem** database holds system data that is shared among all projects. This is where work breakdownstructures, parameters, methods, and similar system data is stored. There can only be one SWSystem database, but it may contain several system. A change to a system in this database will apply to all projects relating to this system.

2. The **SWLogin** database stores all ShipWeight users and user groups and information about the permissions given to the groups and users assigned to the groups. There can be only one SWLogin database.

3. The **sdb_ShipDB** database holds the historical weight data from previous projects and this is the data that is used for the regression curve in the parametric estimation. There can be more than one historical database, but usually there is only one.
4. The project database holds the project data. A project database can store several projects, but you can also have several project databases. The project databases always starts with SW followed by a number (the number specifies the system relation).

5. Project databases always comes in pair, where the primary project database has a secondary database with the same name, but ending with _Log. This secondary log database stores all new entries, but also all changes and deletions.

The Work Break Down Structure

The work breakdown structure (WBS) is the main coding structure in ShipWeight and has its main function in that all items must be assigned to a WBS group and the combination of the WBS group and ItemNo is what uniquely identifies a weight item.

All parametric estimation is done according to the work breakdown structure, and thus the methods for the parametric estimation is related to the WBS weight groups. This means further that to be able to exploit historical projects it means that the WBS must be shared between projects.

To summarize:

- All weight items must be assigned to a WBS group
- The WBS coding must be shared between projects for estimation purposes.

Customizing the ShipWeight System Database

In this session we will show step by step how to:

- Create and Edit Work Breakdown Structure
- Create Project Type Structure
- Create Own Parameters
- Create Parameter Views

Step 1: Prepare an Excel Sheet with your WBS

We need to start out with preparing an Excel Sheet that has the following columns:

- **SystemID** – this is the name of the system you want to create and should be same for all rows in the Excel
- **PostID** – this column will hold the ID of the various weight groups
- **Description** – this column holds the description of the weight group
- **PostOver** – this column should have the ID of the parent group
- **Sort** (optional) – used to add numbers to force a specific order within a level. If not used, the groups will be sorted alpanumerical.
- **Icon** (optional) – used to add a number to specify a specific icon to be related to the group.

Some special considerations:

- The topnode needs to have **PostID** set to DISP (unless otherwise specified in the system setup window, see later in this document) and should have a blank field for the **PostOver** column.
- Every level of weight groups that is supposed to be used for parametric estimation (often all without loads and reserve groups), should have a "Remainder" group as the last group in that level. A remainder group has a **PostID** that ends with the letter "R".

The below shows a small sample of a prepared SWBS in Excel.

	A	B	C	D	E	F	G
1	**SystemID**	**PostId**	**Description**	**PostOver**	**Sort**	**Icon**	
2	SBM	DISP	Displacement				
3	SBM	LW	LightShip	DISP	1	1	
4	SBM	DW	DeadWeight	DISP	2	2	
5	SBM	WRE	Weight Reserve	DISP	3	3	
6	SBM	H	Hull (existing tanker)	LW			
7	SBM	TS	Topside	LW			
8	SBM	V	Vessel	LW			
9	SBM	TU	Mooring and Turret	LW			
10	SBM	R	Remainder	LW			
11	SBM	CA	Cargo	DW			
12	SBM	CO	Consumables	DW			
13	SBM	L	Loads	DW			
14	SBM	O	Others	DW			
15	SBM	CW	Client Weight Reserve	WRE			
16	SBM	COW	Company Weight Reserve	WRE			
17							

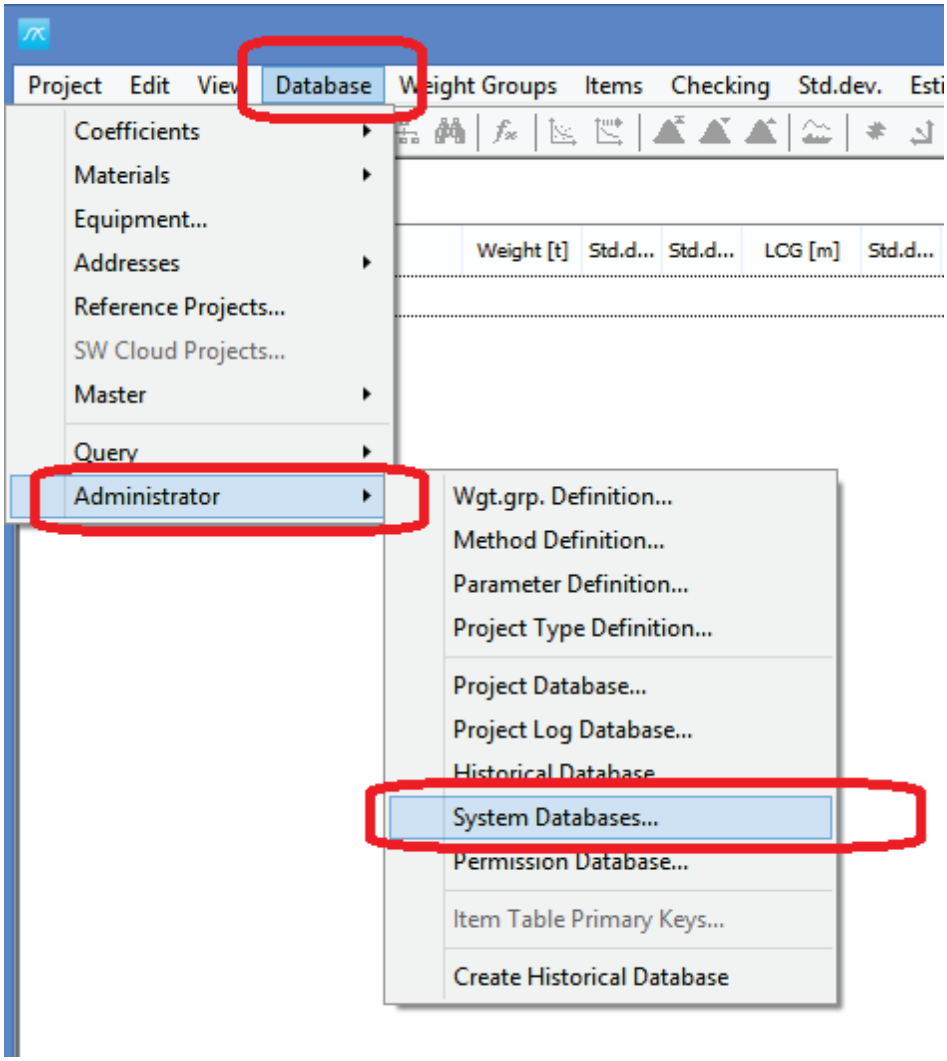
Step 2: Start ShipWeight and Log on

Start ShipWeight and log in to ShipWeight using the user name “Administrator” and password “admin”.

The system will be default be set to “Standard”.

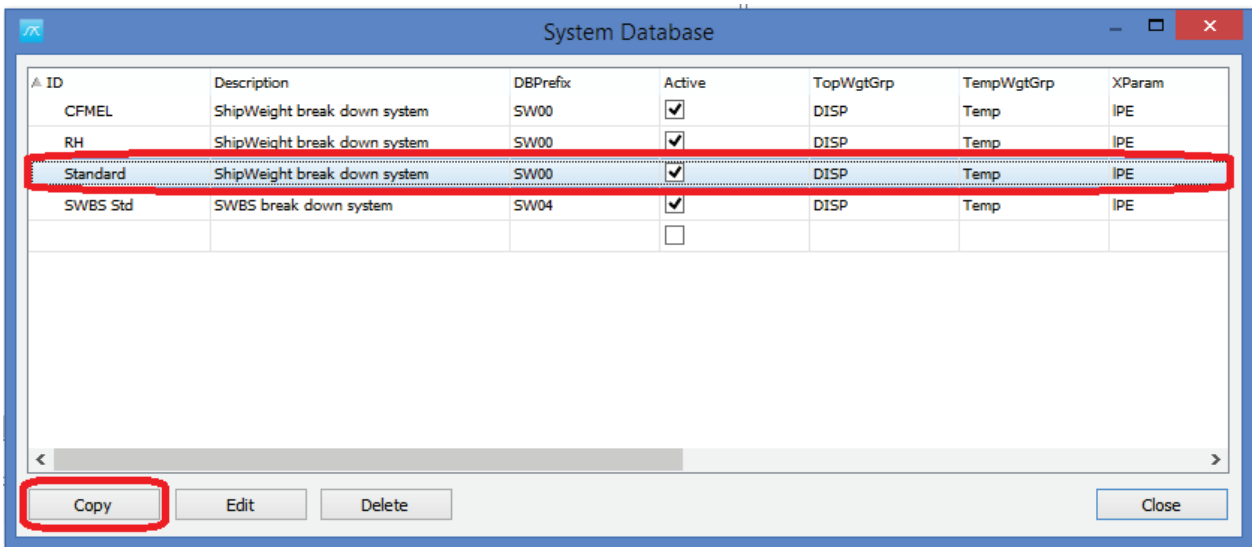
Step 3: Open up the System Database Creation window

Open up the System Database window by go to the menu Database->Administrator->System Databases…



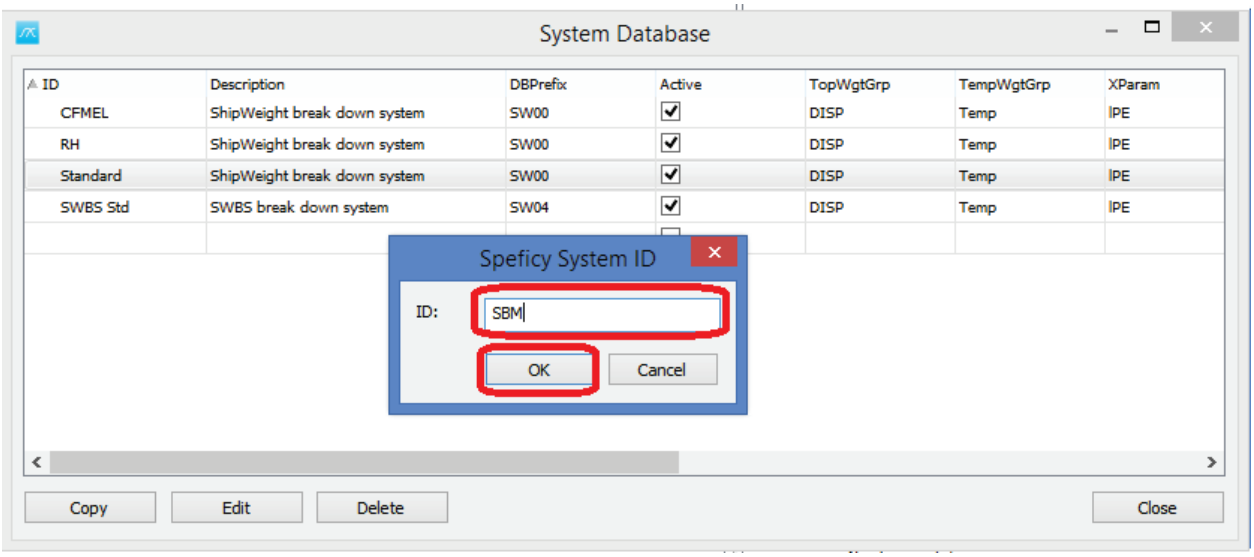
Step 4: Make a copy of one of the existing WBS structures:

Select the row named “Standard” in the System Database window and then click on the “Copy” button.



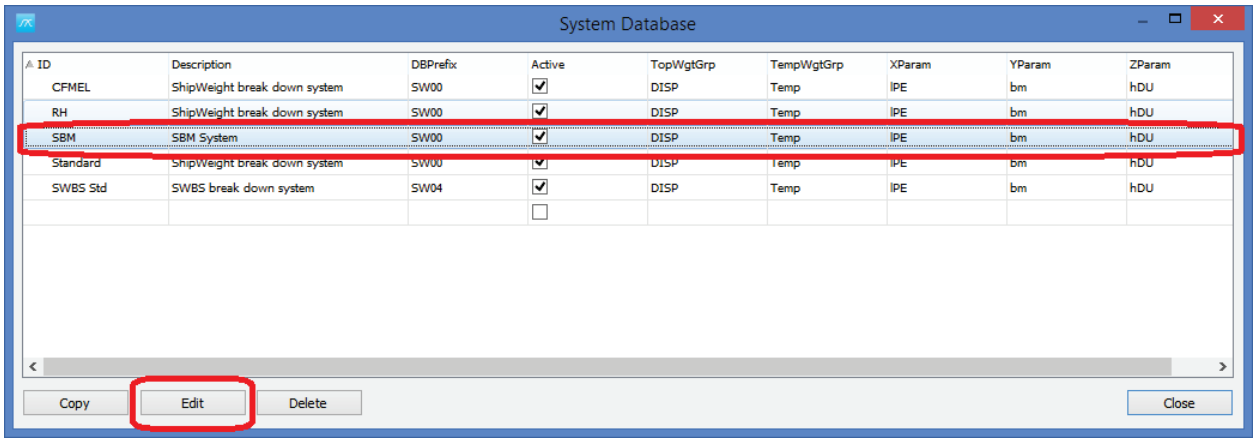
Type in the ID for the new system you want to make in the pop-up window. Note that this ID will have to be the same as the one you have in the SystemID column in the spreadsheet.

Then click OK.



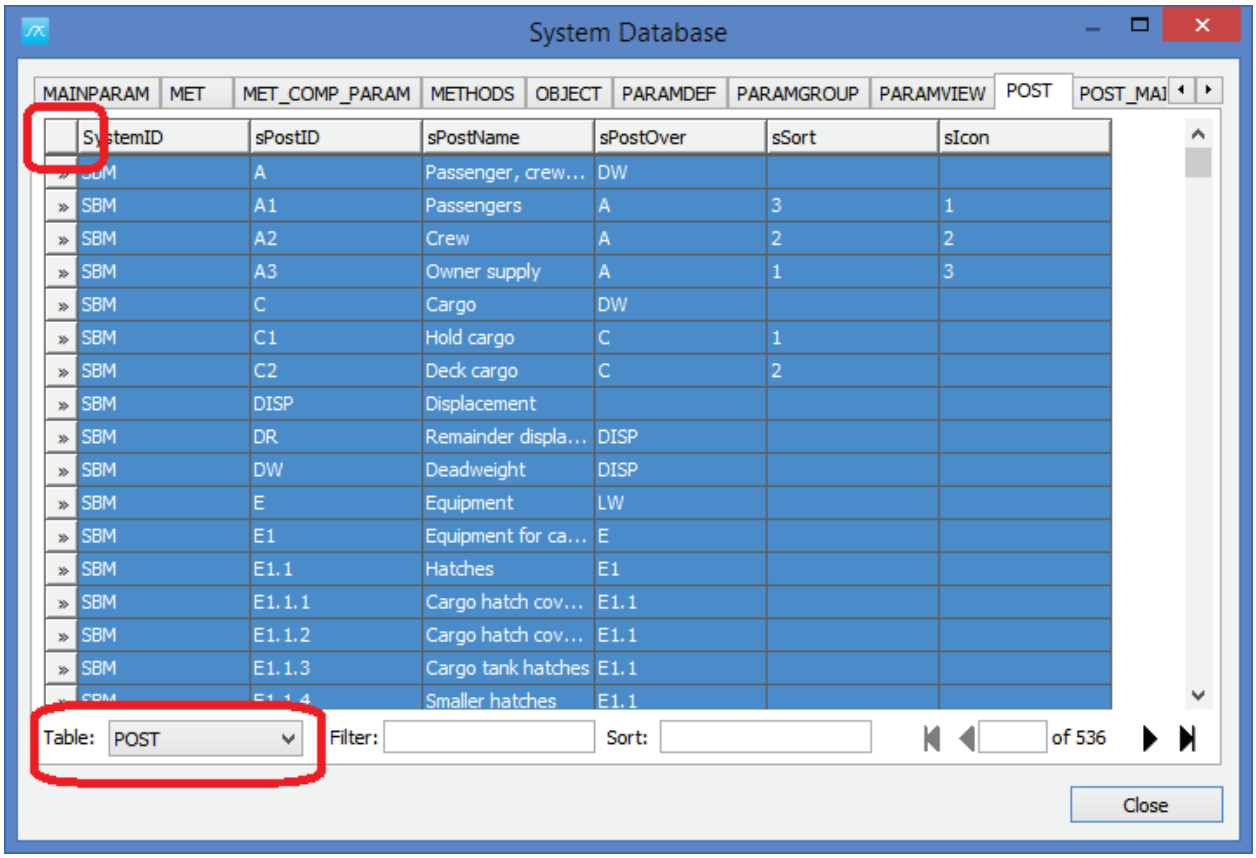
Step 5: Edit the new WBS structure

A new line will now appear in the System Database window, with the new system ID. This is now a copy of the standard system. We will now edit this to make it into the new system. Select the new line and click the "Edit" button as shown on next page.

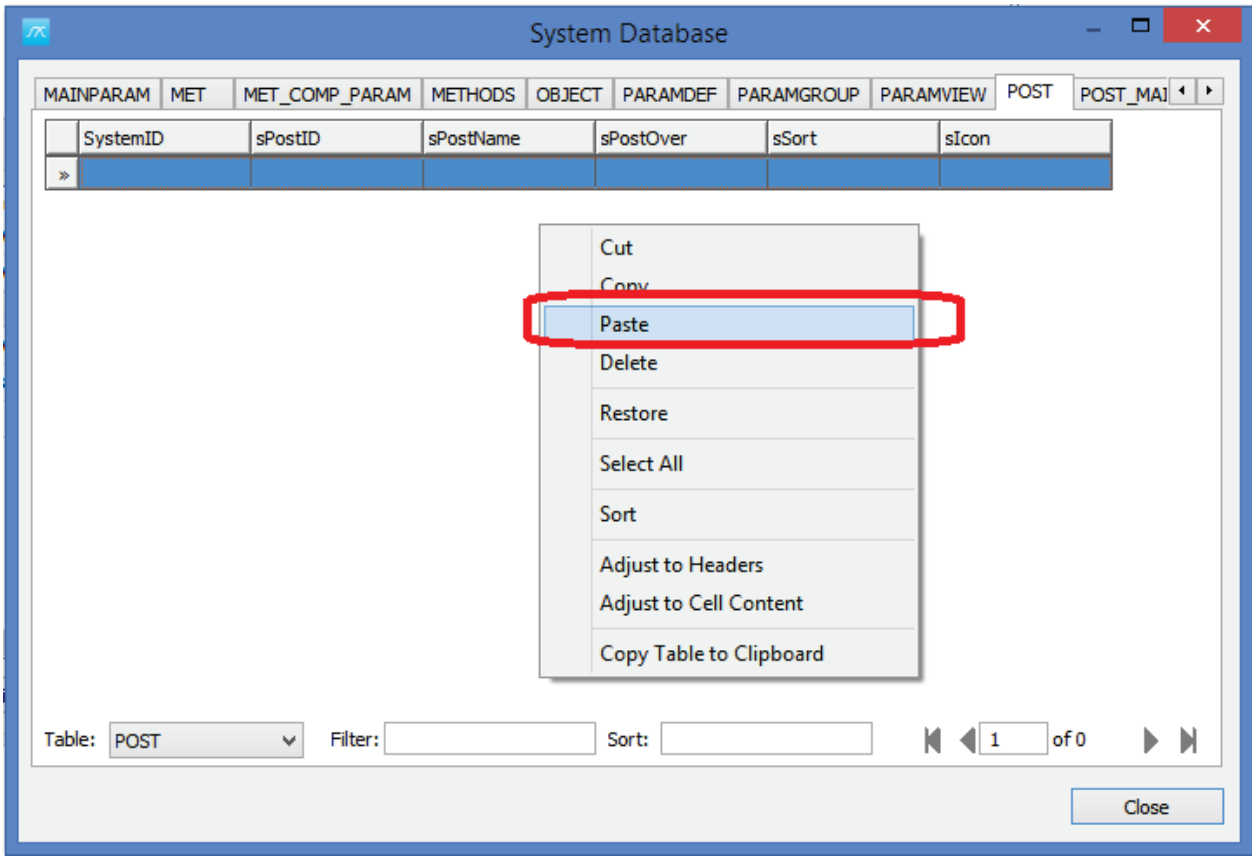


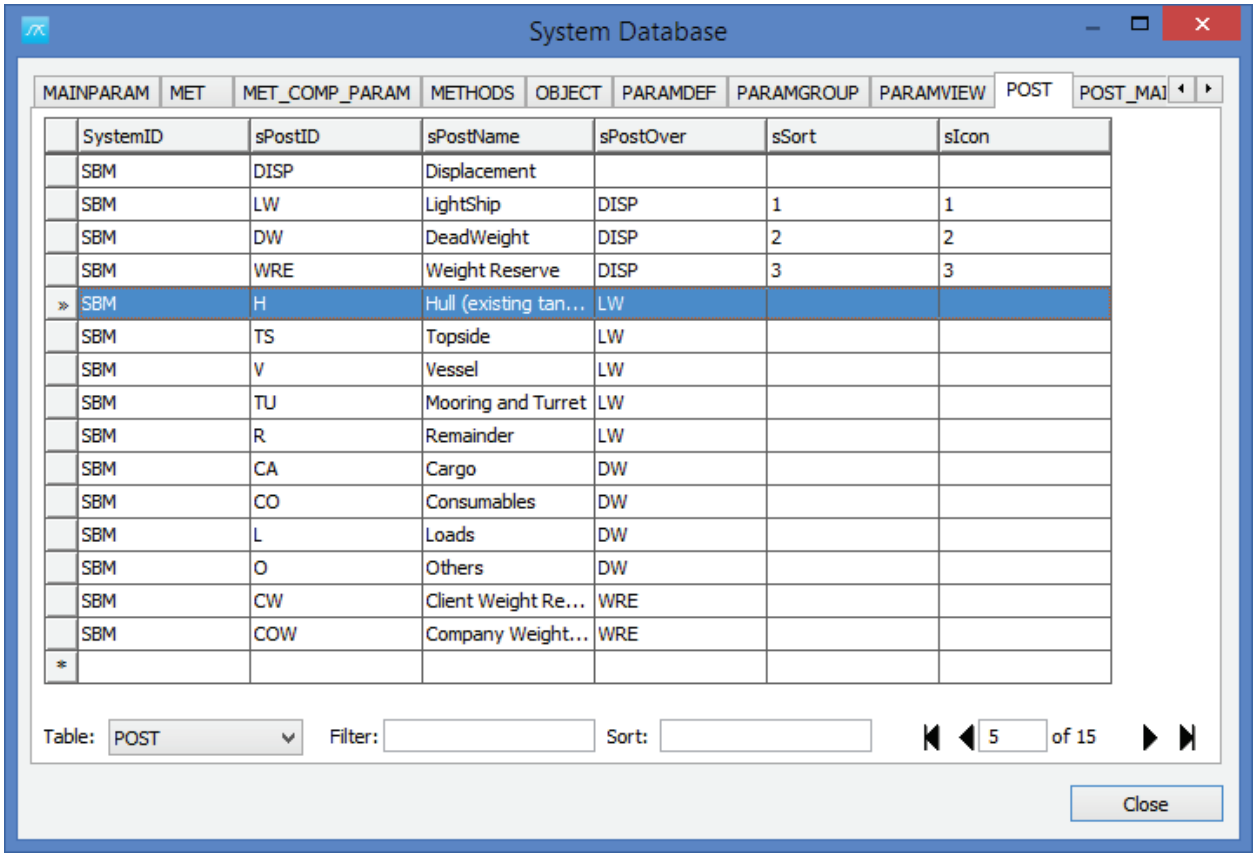
A window with the system database tables will show up. Here select the "POST" table by selecting it from the droplist in the lower left corner of this window. Next, select the small square at the upper left corner of the table to select all rows (our right-click in the table and select "Select all" from the submenu).

Hit the "Delete" button to delete all rows in this table.

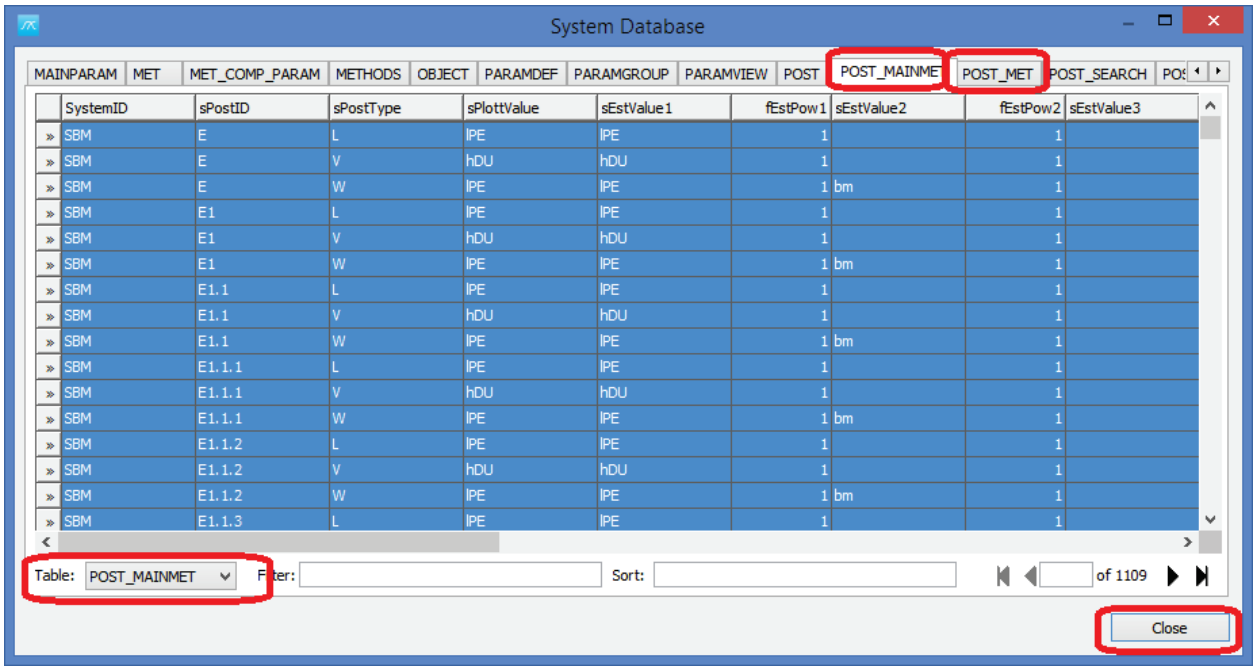


Now, copy the table from you Excel sheet with the work breakdown structure and paste it into the now empty “POST” table in this view (do not copy headers).





Finally, select the “POST_MAINMET” table, select all rows in this table and delete them.

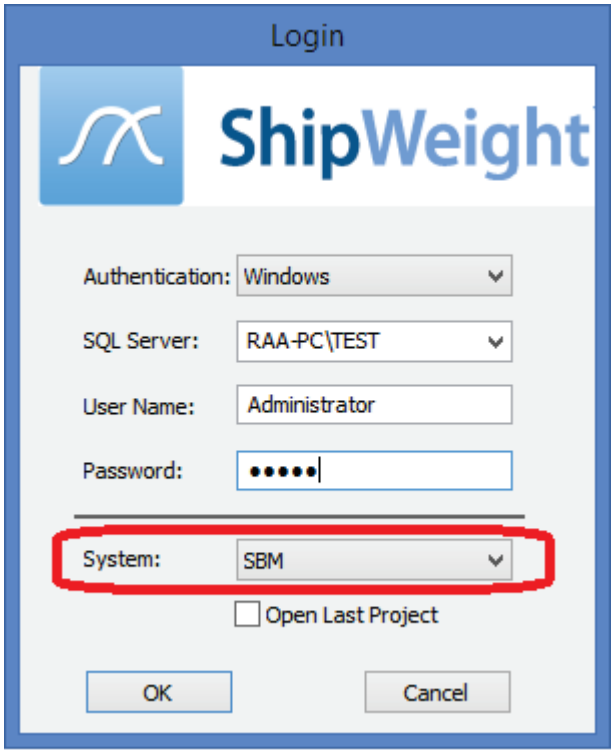


Repeat the same (delete rows) also for the “POST_MET” table. Then close this window.

Step 5: Restart ShipWeight with the new Structure

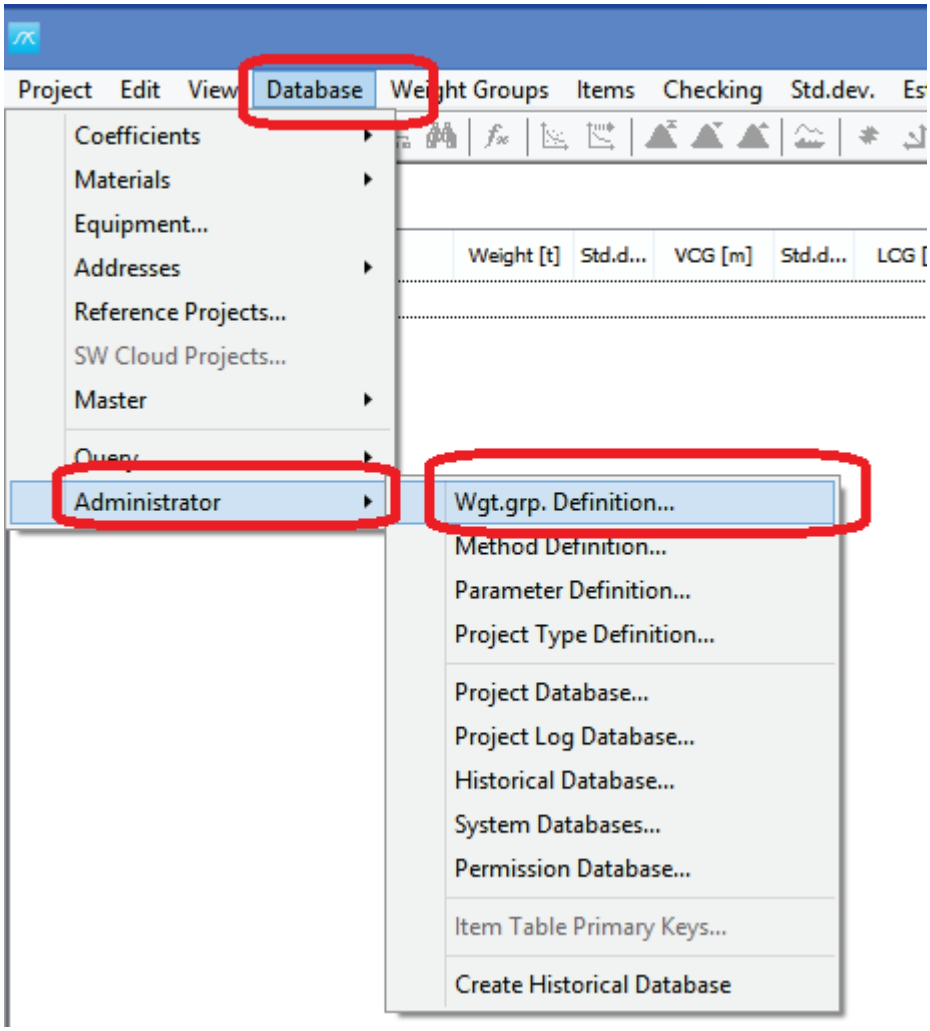
Now you are read to also close the System Database window and also close down ShipWeight (menu: Project->Exit) and restart ShipWeight with your new system.

When you restart ShipWeight, select your new system from the “System” droplist in the Login window. Log on with username “Administrator” and password “admin”.

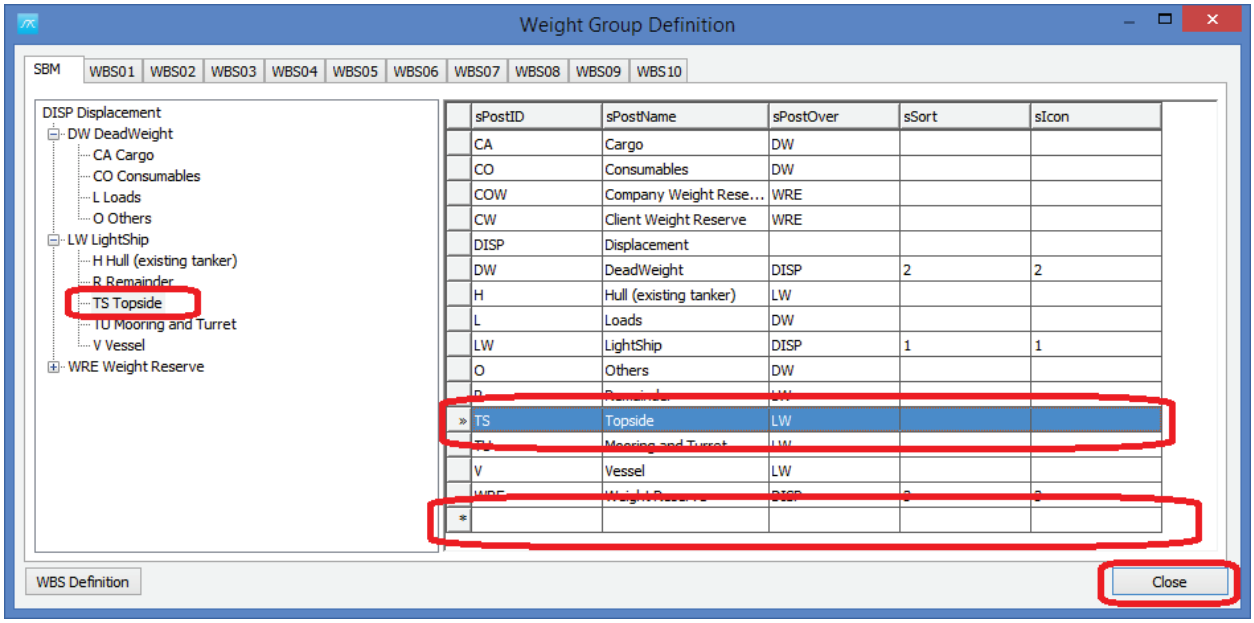


Step 6: Make any necessary changes to the new WBS

If you need to make any changes to the weight groups in the new WBS, this can now be done from the Database->Administrator-Wgt. Grp. Definition… menu.



This will open a window displaying the new WBS>

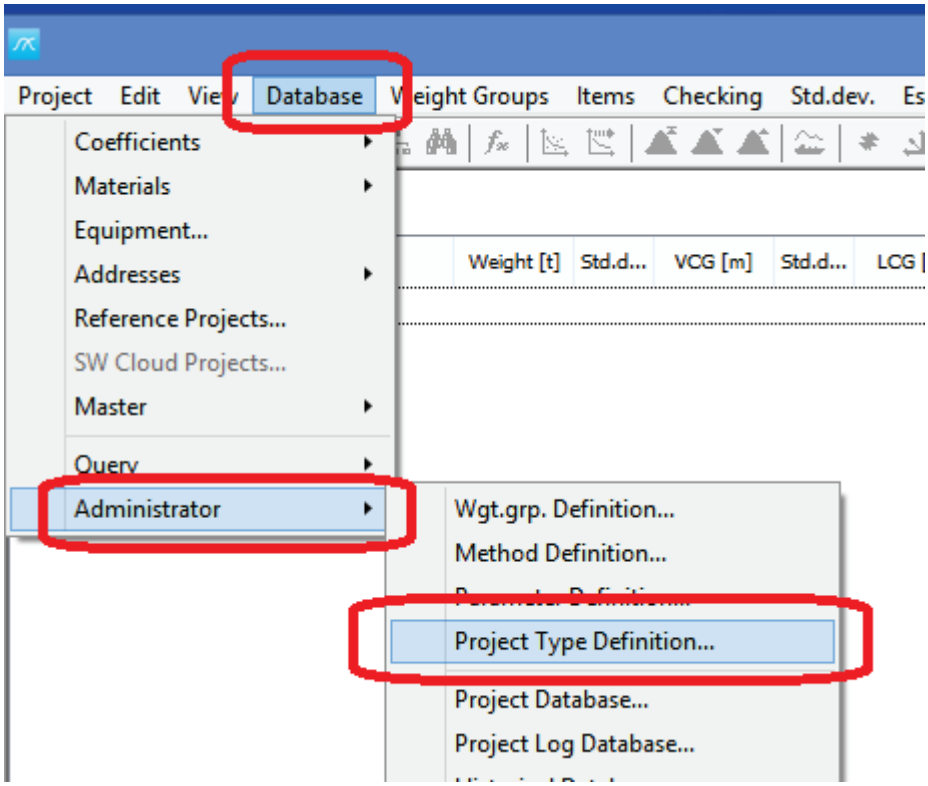


In the window you can use the treeview to the left to navigate and select nodes in the WBS, then alter values for the corresponding group in the grid to the right.

Note: You can also add a new weight group by adding the weight group information in the last row (marked with a *). If you do this, make sure you move to the next row (or another row in the grid) after the information has been entered before you close the window.

Step 7: Open the Project Types window

Open up the Project Type window by going to menu Database->Administrator.>Project Type Definition…



There are two types of project types:

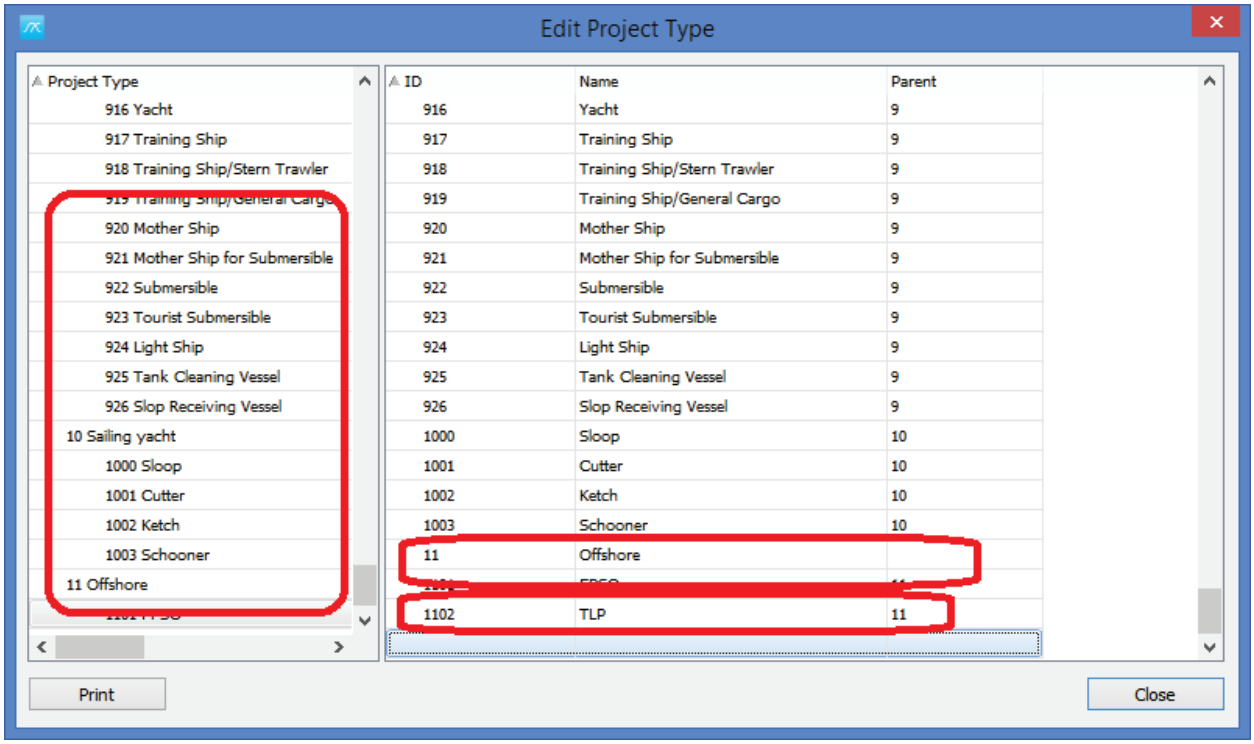
- Main Type
- Sub Type

You can add a Sub Type to an existing Main Type, or you can add a new Main Type to hold new Sub Types.

Main Type and Sub Types have a numeric ID and a name. Then ID of a Main Type can be anything from 0 to 99 as long as it is not taken by an existing Main Type. The Sub Type ID will be the ID of the Main Type + anything from 00 to 99.

This means that if 10 Main Types exists (Main Types are the top nodes in the treeview to the left) a new Main Type entered would then have 11 entered in the "ID" column, a name entered in the "Name" column, and a blank entry in the "Parent" column.

Sub Type of this new Main Type, would then have IDs 1100, 1101, 1102, etc and the "Parent" column should be set to 11.

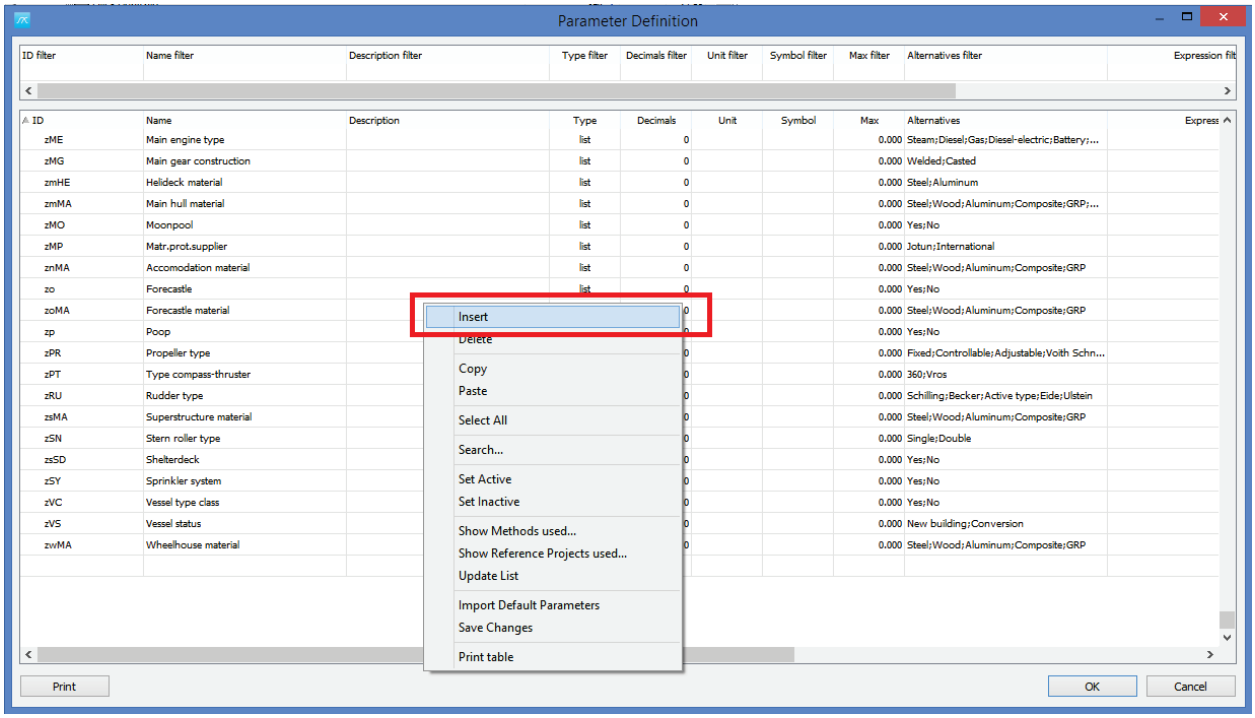


When you add new line to the list, after entering information into the cells, click the next cell above to make the list update itself, then scroll to the bottom to see a new line ready for a new entry.

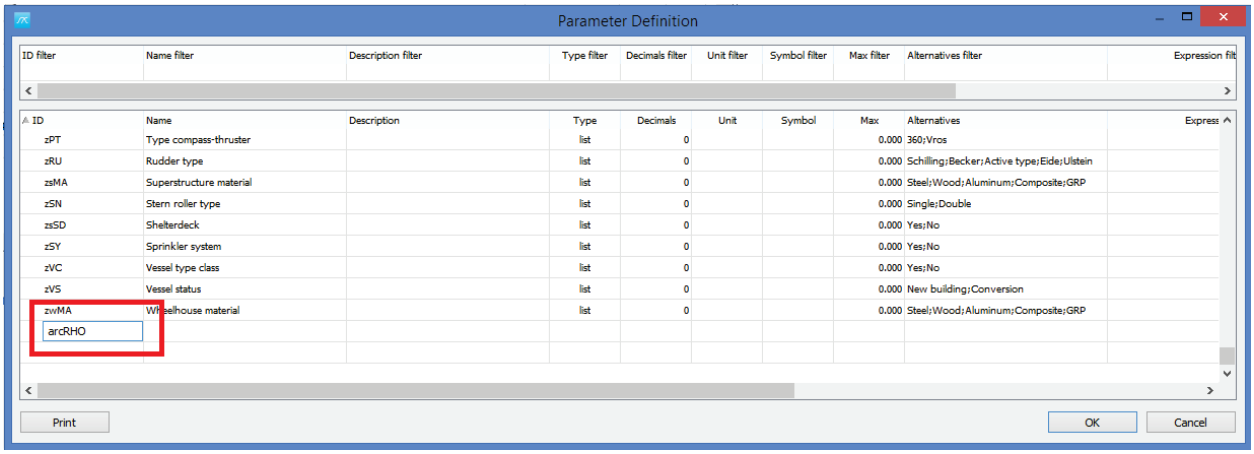
Step 8: Create the new Parameters

In ShipWeight main window, go to menu Database->Administrator->Parameter Definiton…

In the Parameter Definition window that opens, scroll to the end of the list, right-click the list and select "Insert". These parameters will be available for all projects.

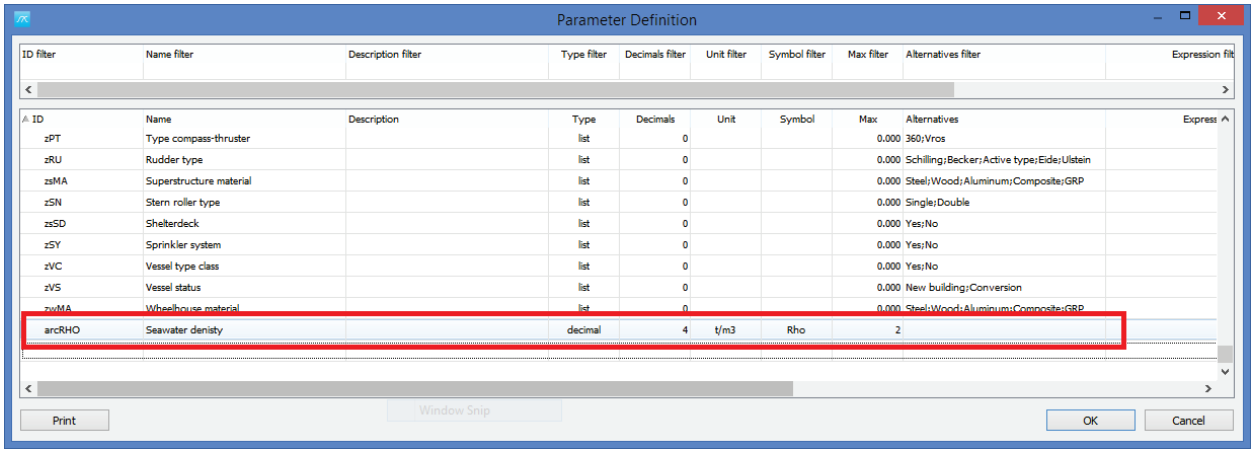


In the new line that appears, click once in the first grid (may take a sec. before it becomes active) in the column ID and when it becomes editable, type in arcRHO as ID.



Click the tabkey to go to the next column (Name) and fill in Seawater density. Continue for the next columns and set Type to decimal, Decimals to 4 (or 3 if you prefer), unit to t/m3 and Symbol to Rho. Finally set Max to 2 (max allowed input).

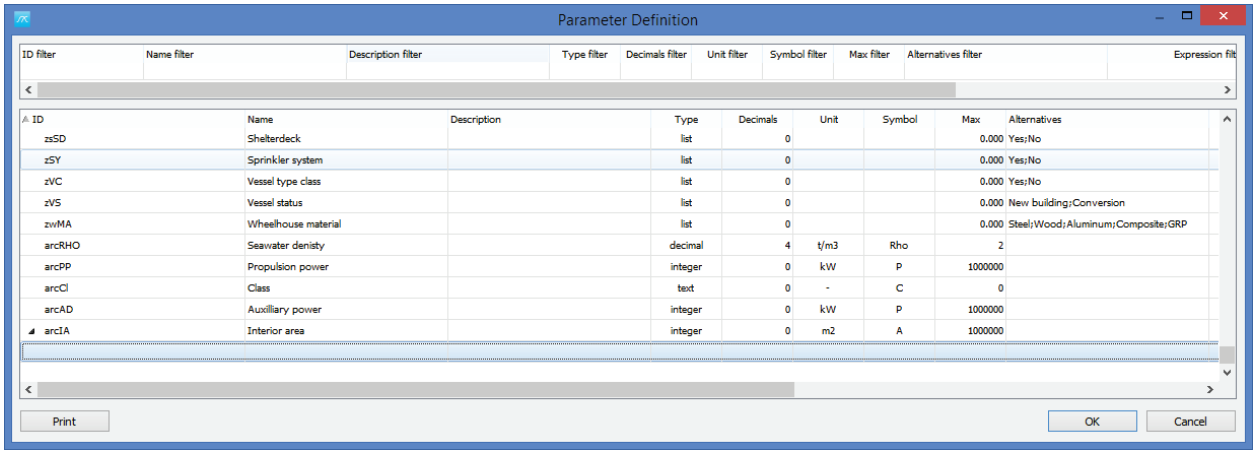
The end result should be like this:



Once again, right-click the list and click “Insert” and add the Prop. Power parameter, name the ID arcPP and fill in the appropriate column values. Repeat for Class, Auxiliary Power, and Interior area. The input may be something like this (you may alter all values here except for the ID – the ID is referred in the report and must be the same as in this document:

ID	Name	Type	Decimals	Unit	Symbol	Max
arcRHO	Seawater density	Decimal	4	t/m3	Rho	2
arcPP	Propulsion power	Integer	0	kW	P	1000000
arcCl	Class	Text	0	-	C	0
arcAD	Auxiliary Power	Integer	0	kW	P	1000000
arcIA	Interior area	Integer	0	M3	A	1000000

The end result should look something like this:

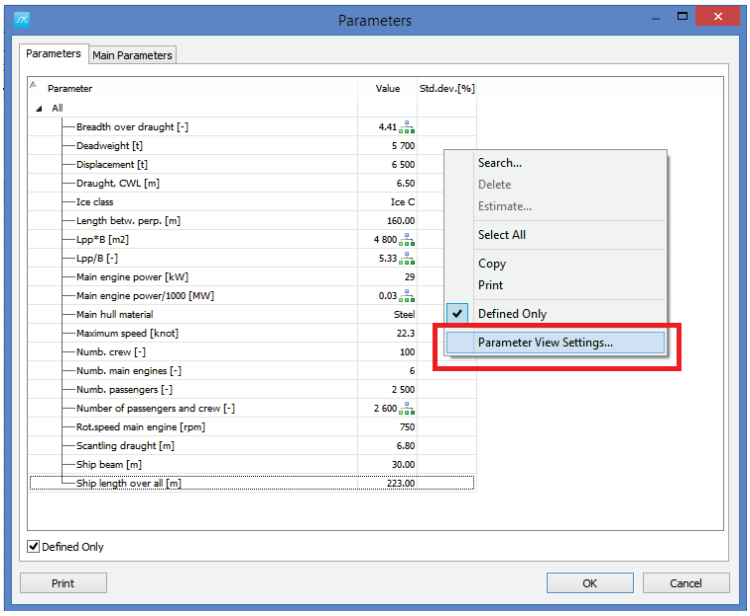


Next click “OK” and answer “Yes” to pop-up asking to reload new parameters.

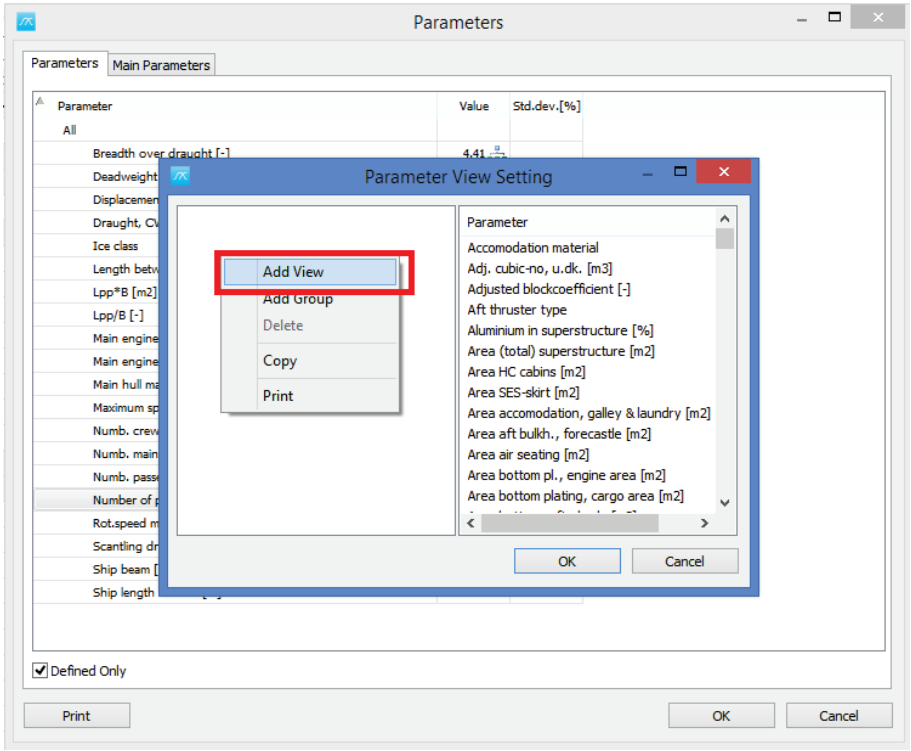
Step 9: Make Custom Parameter View for New Parameters

This step is strictly speaking not necessary per se, but it will make it more convenient to find and fill in these parameters. As with the parameters themselves, the parameter view you make here will be available for all projects.

Start by going to menu View->Parameters… In the Parameters windows, right-click and select “Parameter View Settings…”:

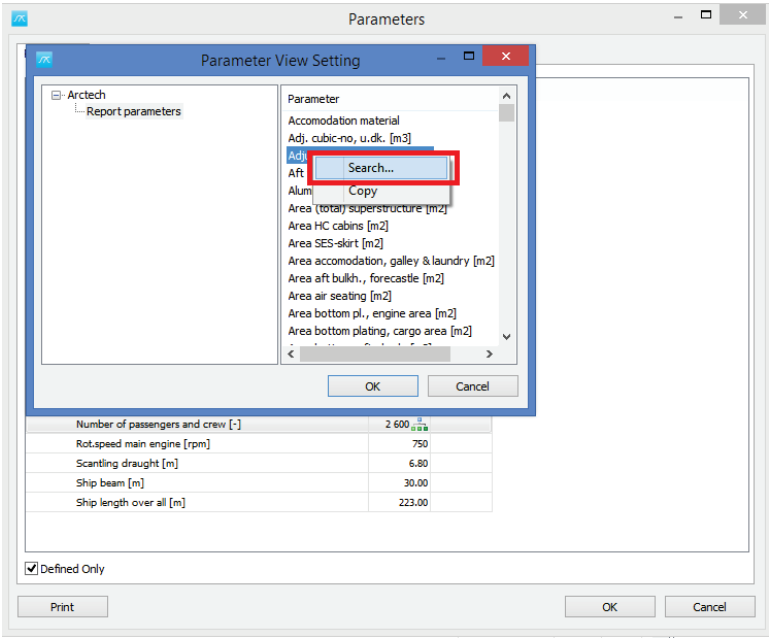


In the Parameter View Setting window, right-click again and select “Add View”

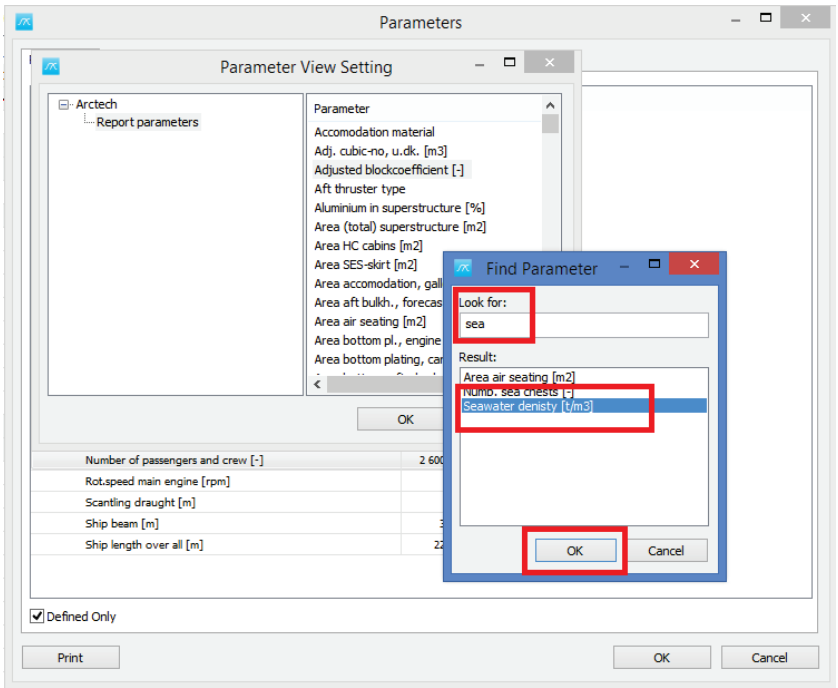


Type in “Arctech” (or whatever you like really) as name of the new View in the grid that appears. Right-click again and select Add Group in the menu. Give in the name “Report parameters” (or something) as name of the group.

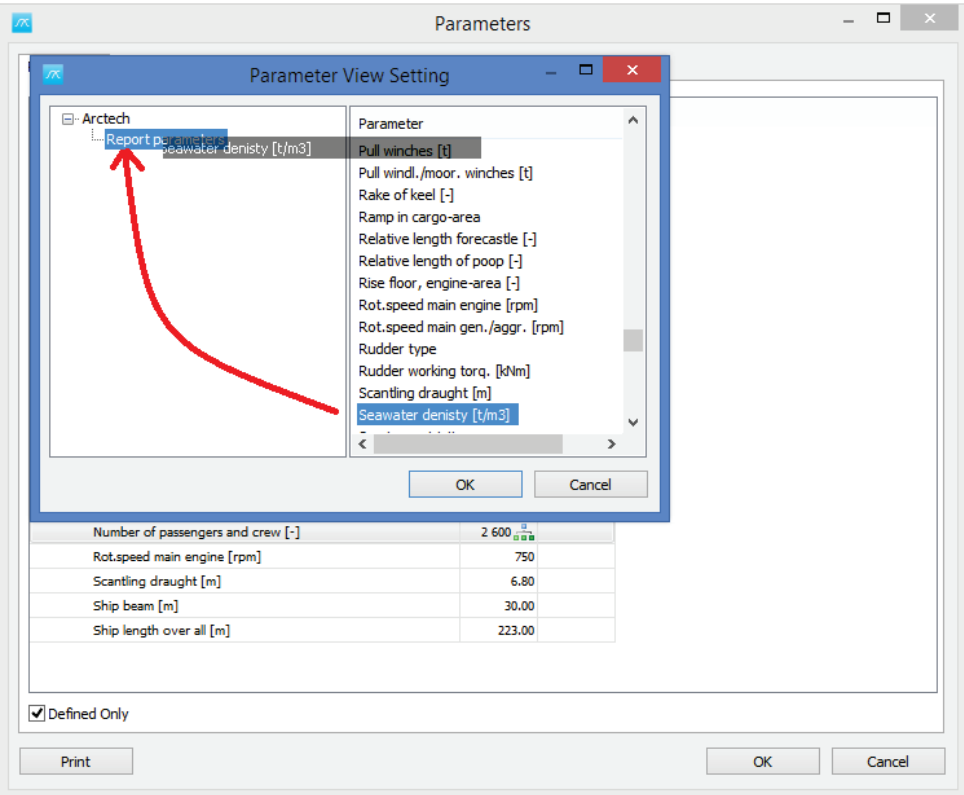
Next, right-click in the Parameter list in this view and select “Search”.



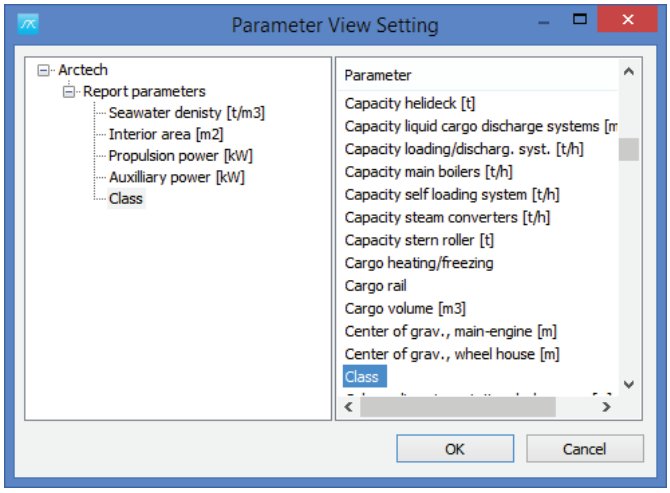
Start to type in “Sea” in the search window to find the Seawater density parameter, select it in the list below and click “OK”.



Now select the “Seawater” parameter in the list and “drag and drop” it with the mouse into the Report Parameter group.

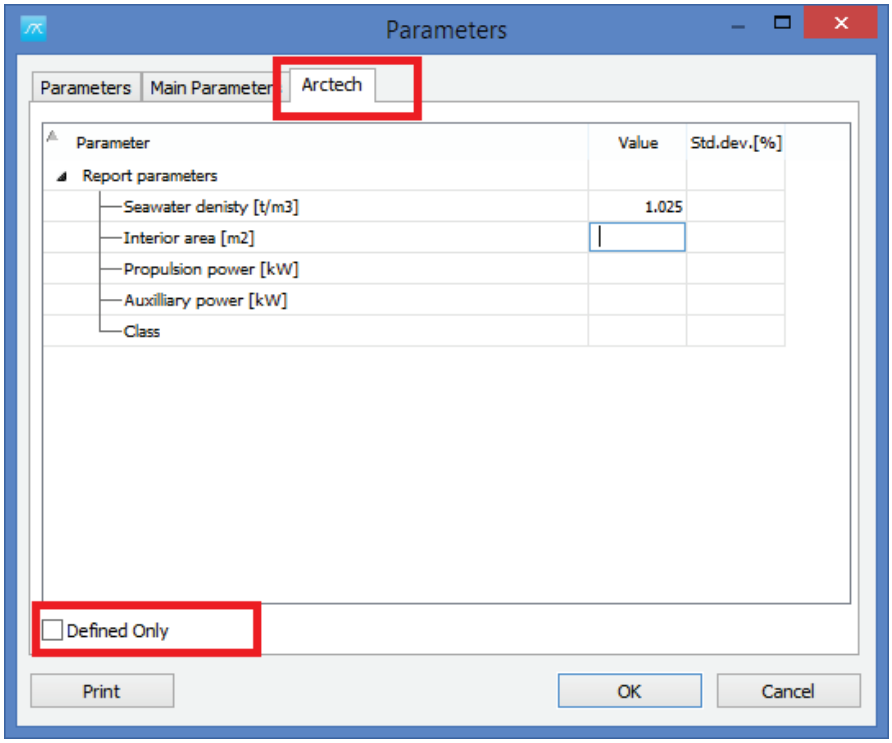


Repeat for the other parameters. End result should look like this:



Note: On some computers we have a bug reported that the entire list of parameters to the right turns blue. This is an inconvenience that we are working to fix, however, it does not prohibit to use this function, everything works - it is mere an esthetic issue. If you experience this we apologize for the inconvenience.

Close the all windows and reopen the parameter window and you should find your new view with the parameter. Make sure the “Defined only” box is unchecked – or else you will not see the parameters. Defined only means only parameter that already have values attached.



Fill in the parameter values in the new tabsheet.

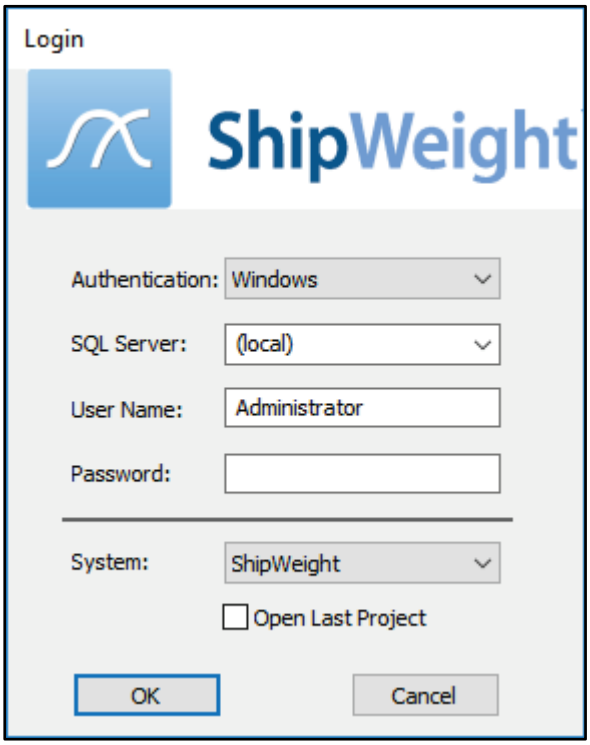
Starting a new project

In this session we will see how to:

- Creating a new project from scratch, enter main parameters
- Project administration functions; open, save, save as, delete.
- Project organization in folder structure.

Step 1: Start ShipWeight

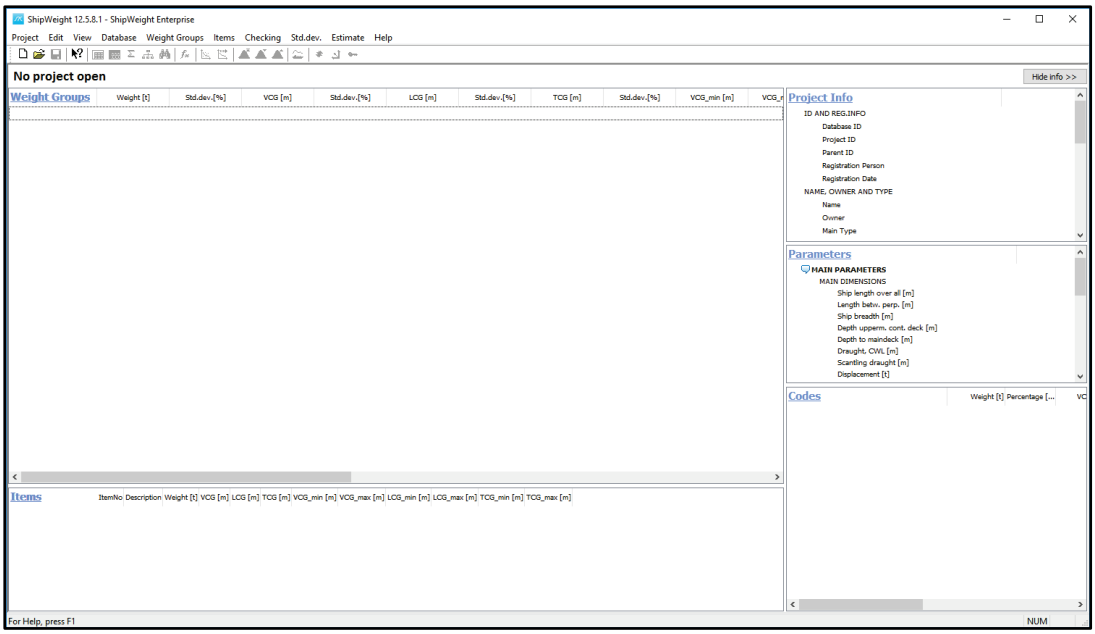
Double-click the ShipWeight icon from your desktop to launch the program. The first thing that pops up is the Login window:



Make sure to select *Windows* as **Authentication** method and leave the **SQL Server** to default. The **User Name** is not your Windows user name, but is your ShipWeight user name. Fill in the corresponding **Password**.

The **System** droplist should bet set to the default value. **Open Last Project** check box should not be checked. Click **OK** button to launch ShipWeight.

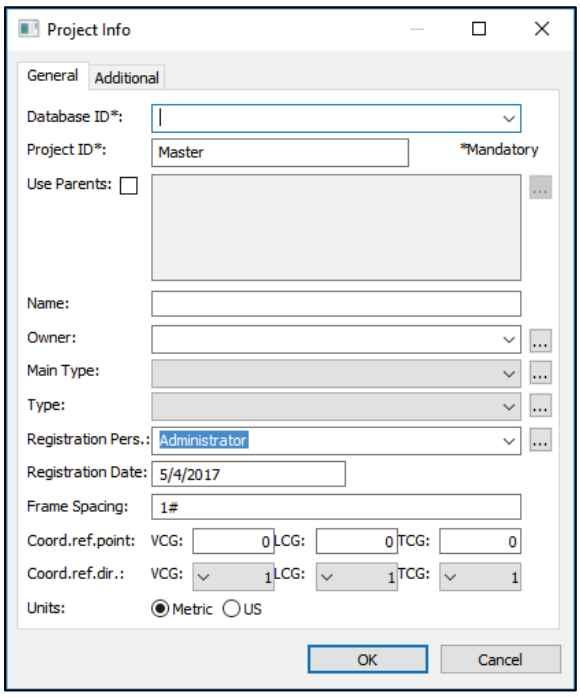
ShipWeight window will open, with no project loaded:



Step 2: Start a new project

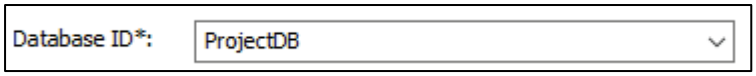
Go to the **Project** menu and select New or go to the toolbar and click the new button 

The **Project info** window pops up:

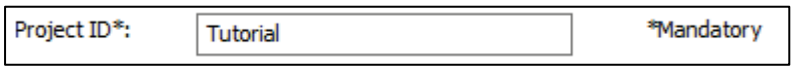


There is two mandatory fields in the Project info window that needs to be filled out:

The project **Database ID*** is the place where to store the new project, so you can select an already existing database from the dropdown list or type in a new database id. For this tutorial, please select *ProjectDB*



The **Project ID*** is the id of your project, and the user can type anything as long as it is unique. For this tutorial, please type *Tutorial*



Name field: *MS Breeze*

Main Type field: select *Offshore Vessel* from the dropdown list

Type field: select *Anchor Handling Tug* from the dropdown list

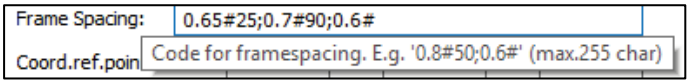
The **Frame Spacing** field: is a bit important because this will allow to include frame spacing in the input and use frame spacing instead of position, when the user enters the position for location of an item in the X direction.

Example: - for frame spacing of 0.65 meters, simply type 0*.65#*

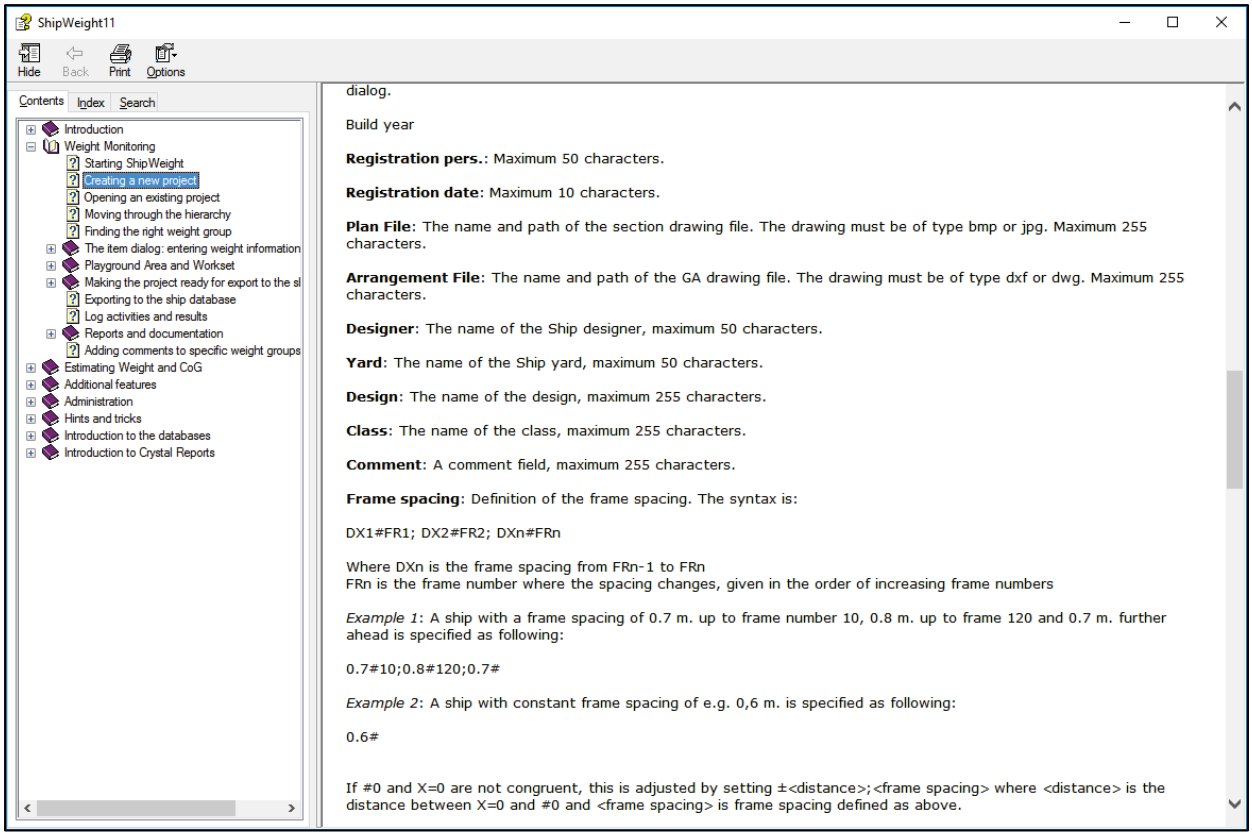
- for dynamic frame spacing, type for example 0.65#25;0.7#90;0.6#

The tooltip here will show an example of the coding for this dynamic

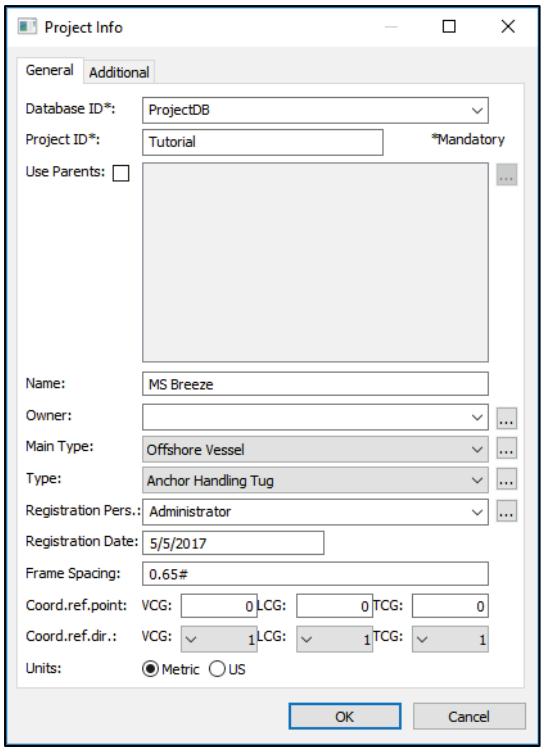
frame spacing:



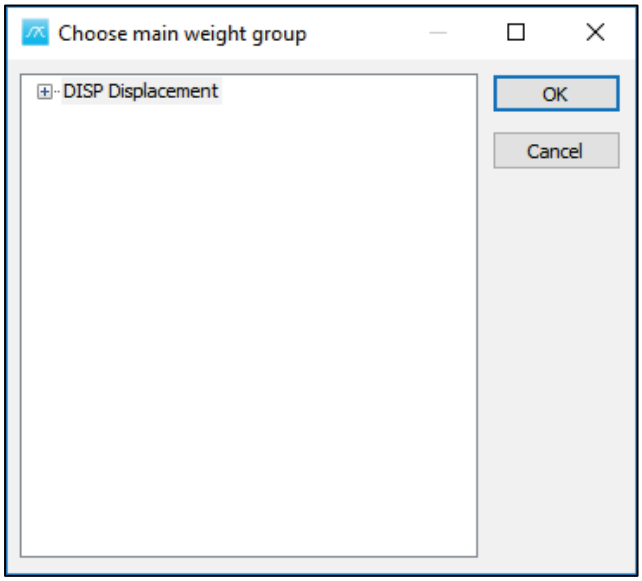
For more information, press the **F1** keyboard button, which will launch the Context-sensitive Help File:



Units field: keep the *Metric* units

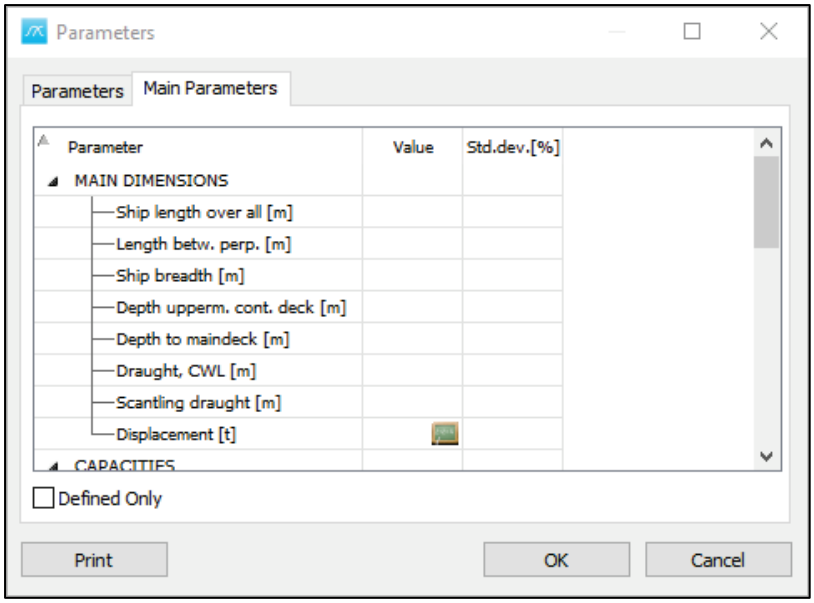


Click **OK** and the new project will start.

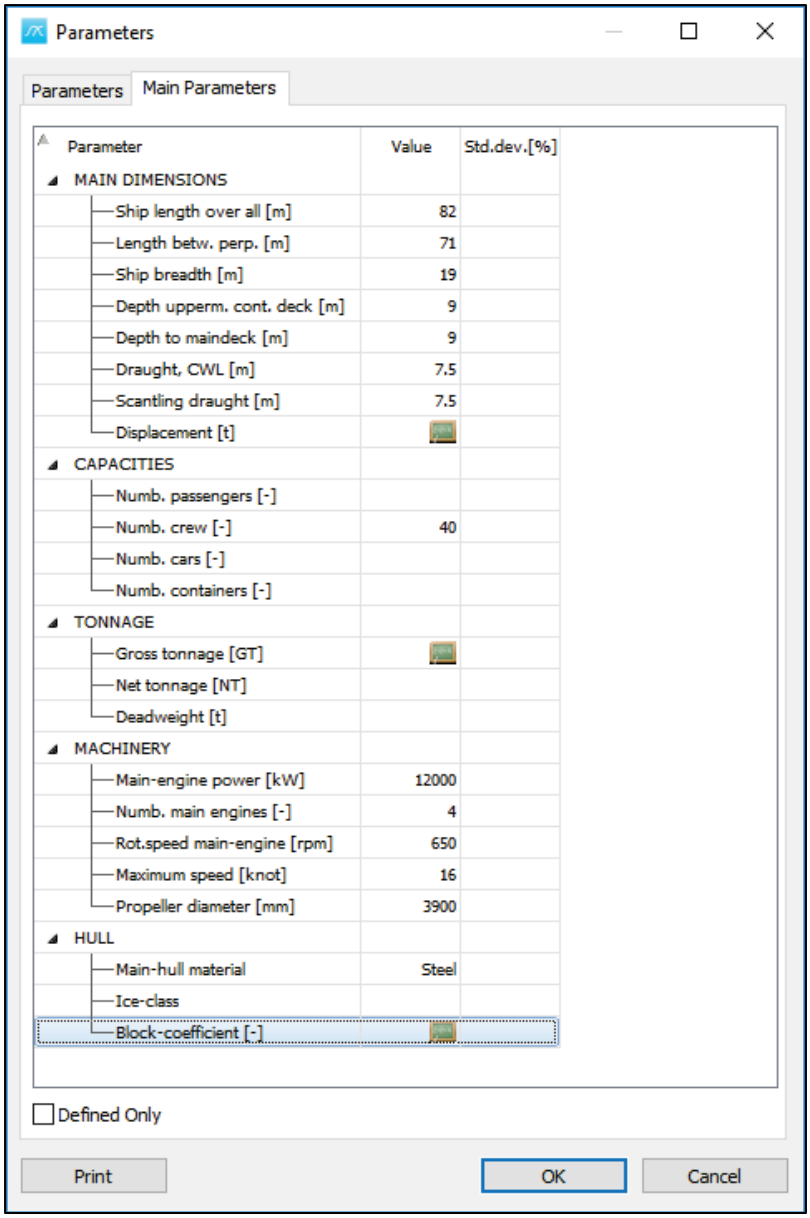


Now, the user will be asked to choose the main weight group for the new project. In this case keep the *DISP Displacement* selection and then press **OK**.

The next window that pops up is the Parameters window:

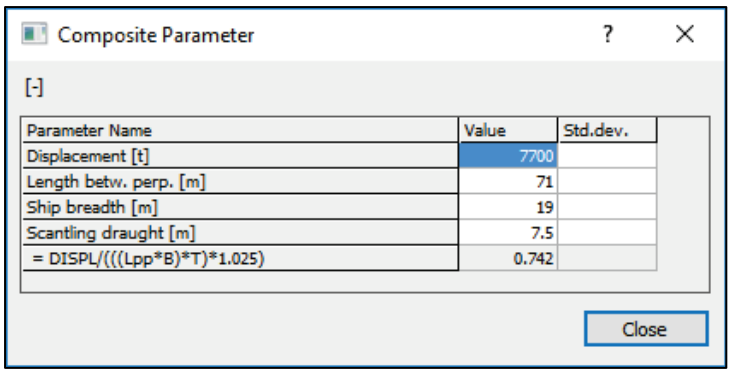


Expand the window and enter the main parameters that are currently available for the project:

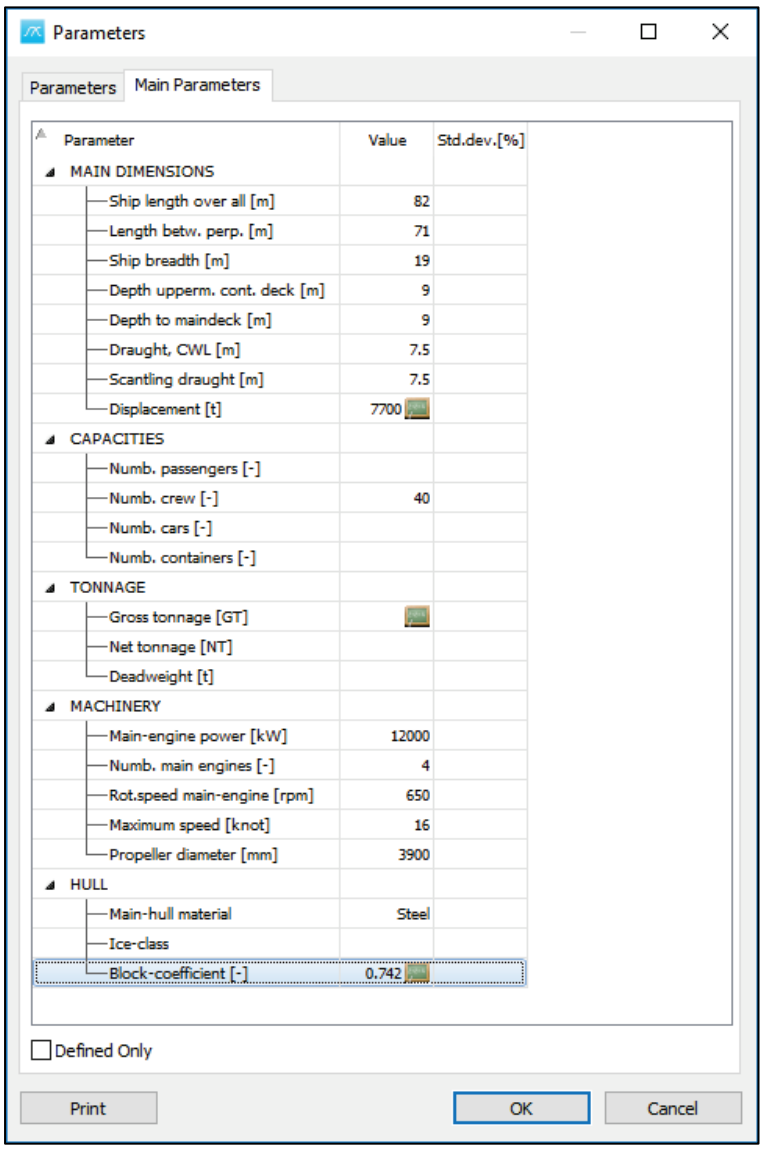


Notice that some of the parameters have a green icon to the right of the Value cell. For example the **Block-coefficient**. If the user knows the block-coefficient value, he can just type in directly.

If the block-coefficient is unknown, the green icon will open the **Composite Parameter** window, which will allow the user to enter other parameters to help calculate the block-coefficient value. Input *7700* for Displacement [t] field, and then let the rest of the parameters as they are. The Block-coefficient will instantly be calculated:

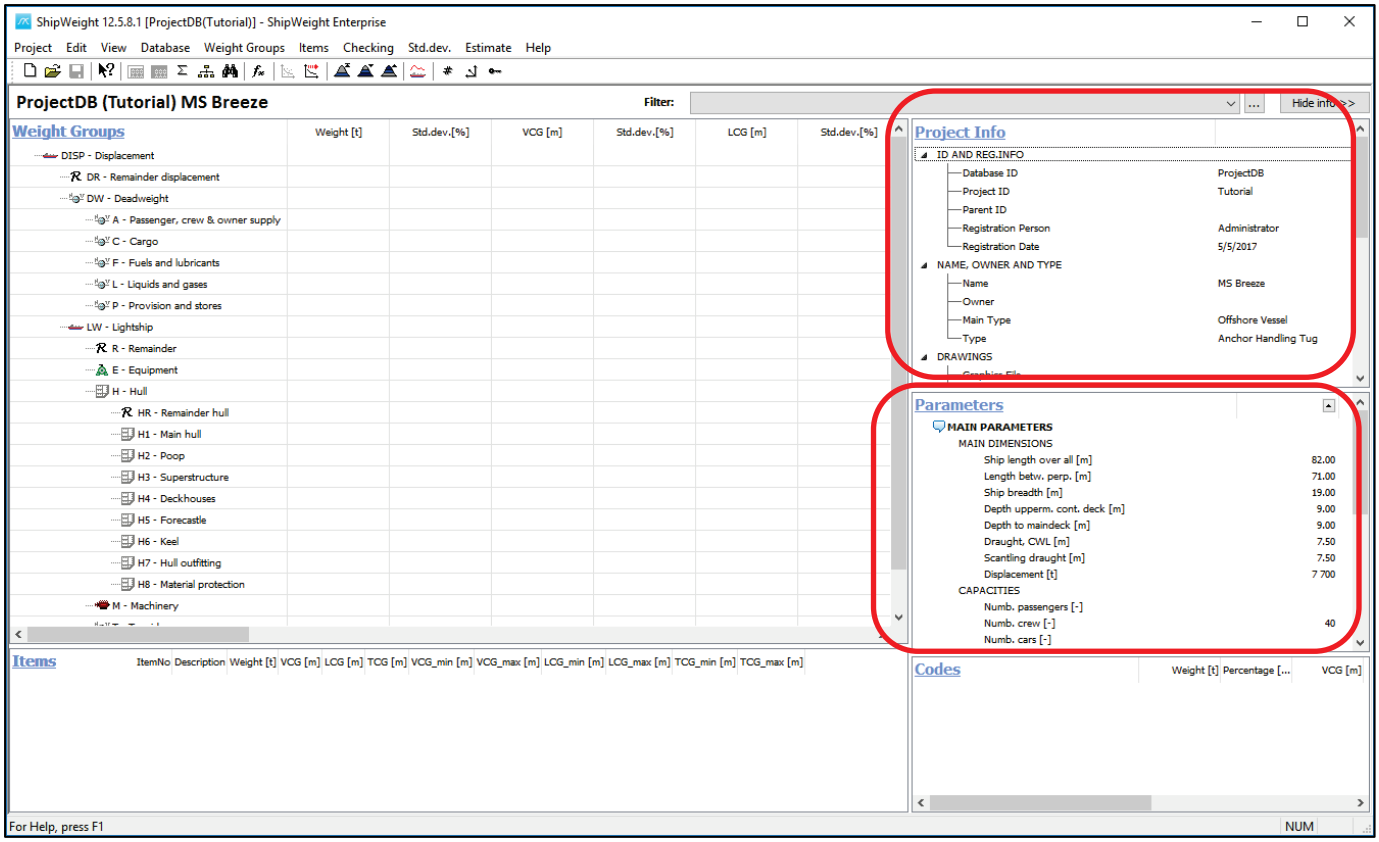


Press the Close button.



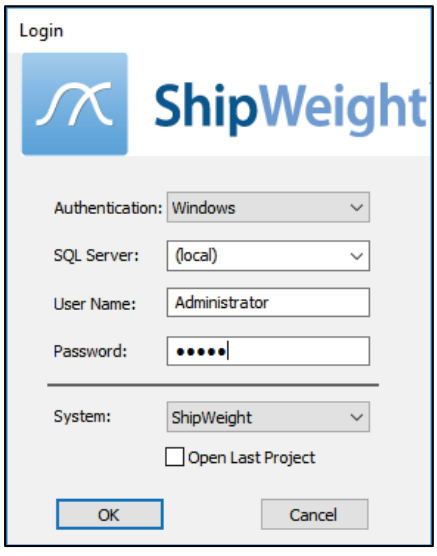
Now click **OK** to close this window.

The Project Info can be found on the top right side of ShipWeight window and the Parameters info on the lower right side. The information can be changed anytime when working with the project, by clicking on the **Project Info** and on the **Parameters** headers.

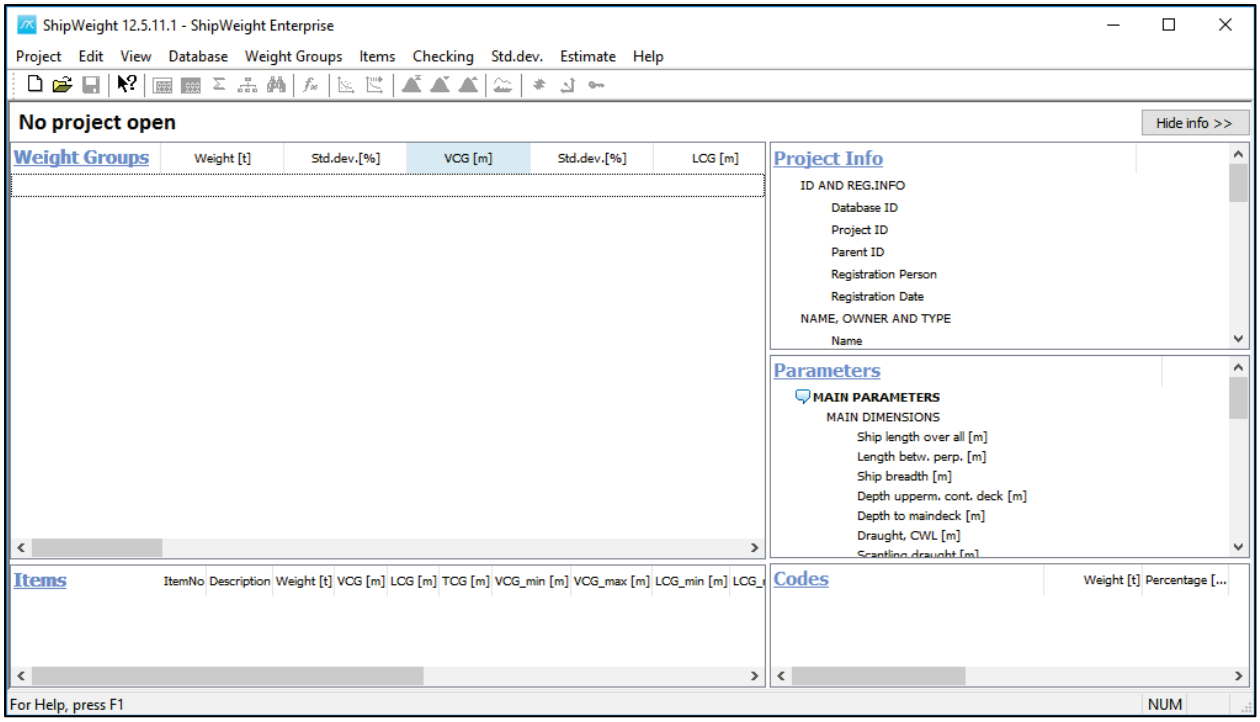


Step 2: Open and Save a Project Copy

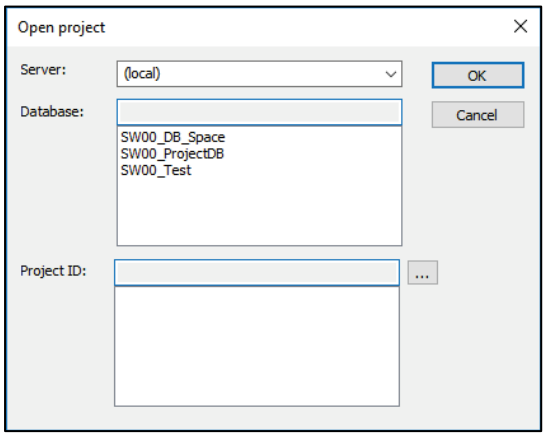
Start again ShipWeight and login:



to open up the main window:



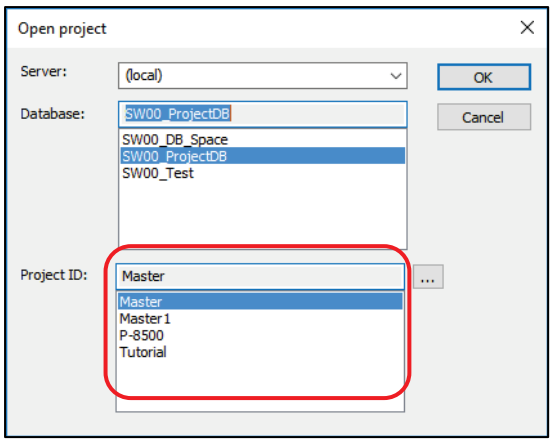
Right now ShipWeight opens without any project loaded into the main window. To load a project into the main window you can either open a project from the menu, going on Project -> Open or you can go to the toolbar and find the Open Project button  . Either way you choose, the Open Project window will pop up:



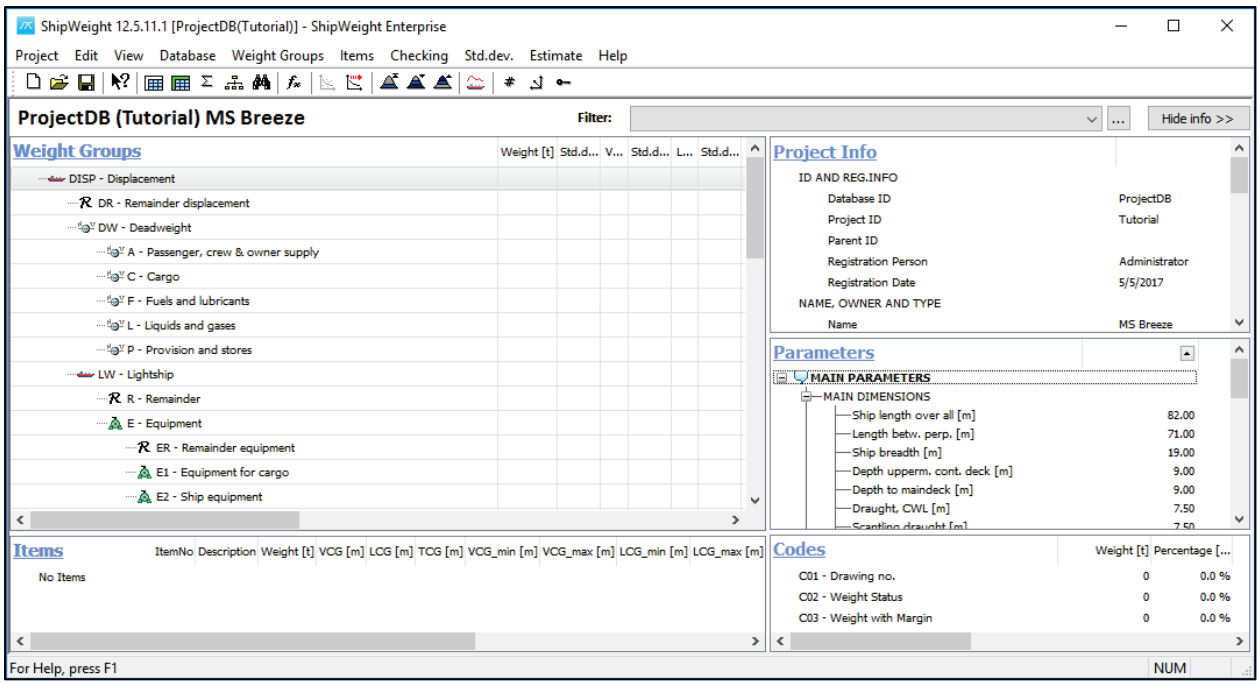
The upper part shows the name of the **Server**, which usually stays the same, you rarely change the server name.

The next part will show the **Database**, the project databases that are on your server. You need to have at least one project Database. Each project database can contain any number of projects.

Now click on the lower part of the project Database, for example click on **SW00_ProjectDB**. You will see in the lower part of the **Project ID** all the existing projects from the selected Database:

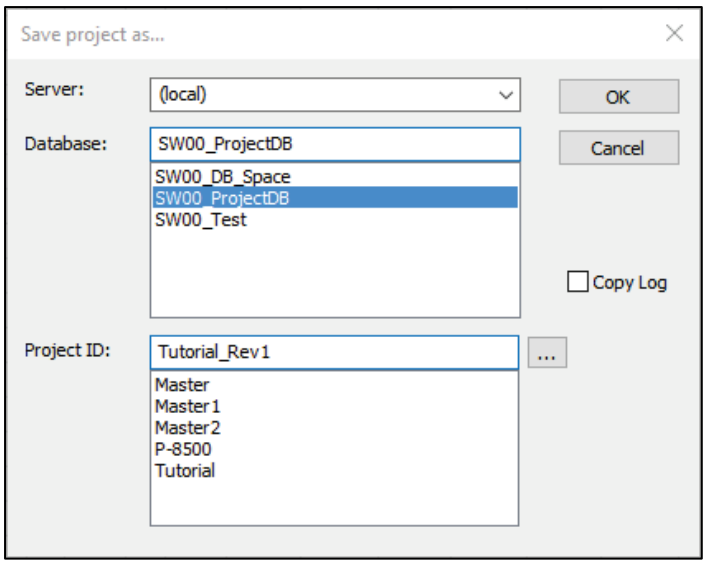


Now, select from the Project ID list the **Tutorial** project and then click **OK** to open up this project, and then after few seconds the project is loaded into ShipWeight:



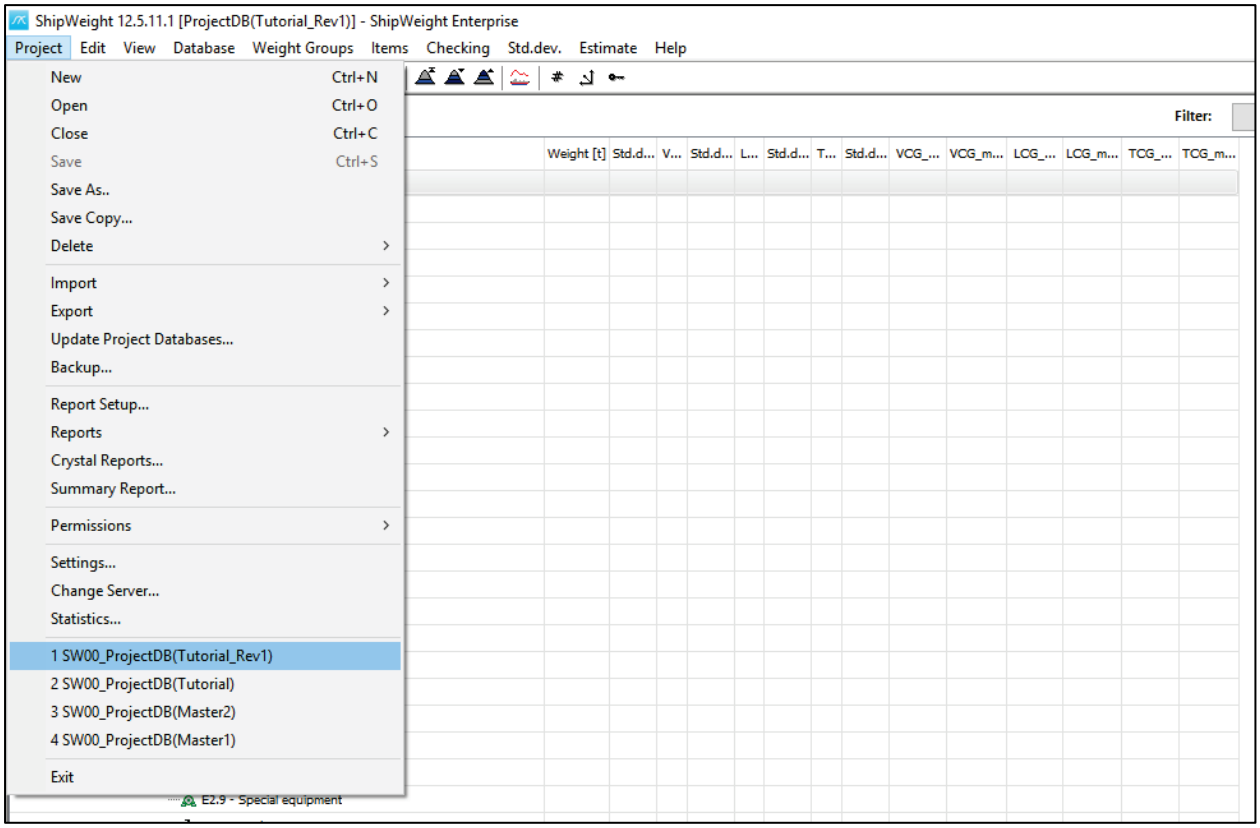
To make a copy of this project, go to **Project** menu, then select **Save As…**

Choose the Database you want to save it in (ProjectDB) and then type the Project ID to be used for the copy of the existing project:



Now hit the OK button and a copy of **Tutorial** project is stored as **Tutorial_Rev1**.

To get back to Tutorial project, you can open it from the Open window, but also on the project menu there are some shortcuts that shows the last four projects:

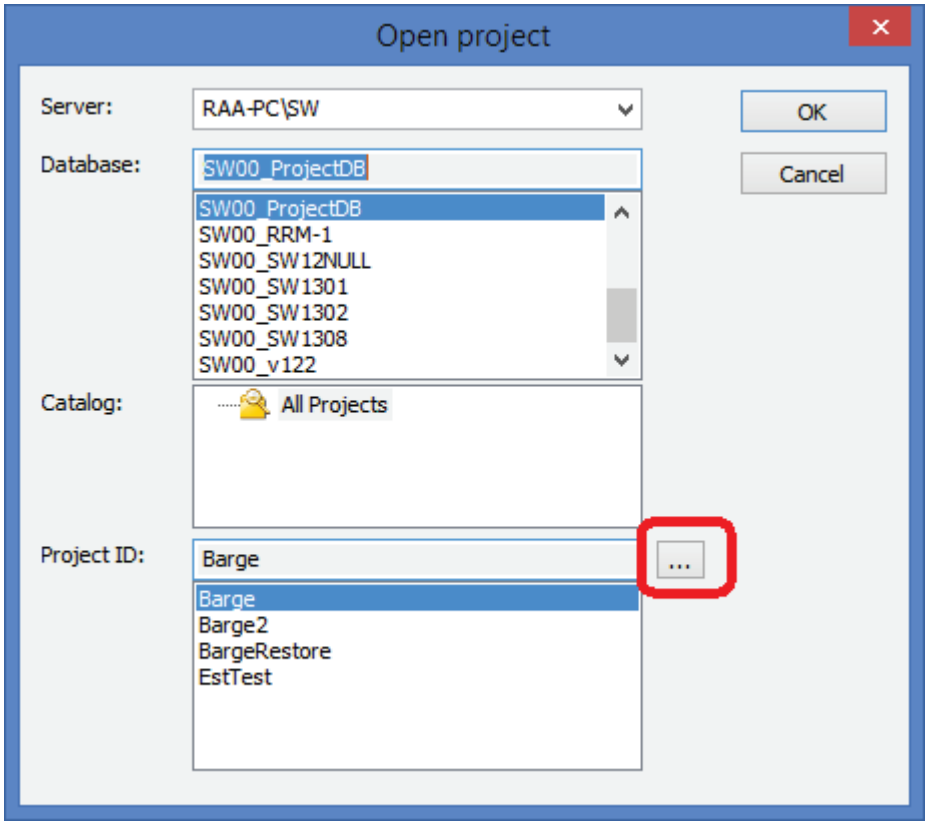


This is how you can open and save projects on ShipWeight.

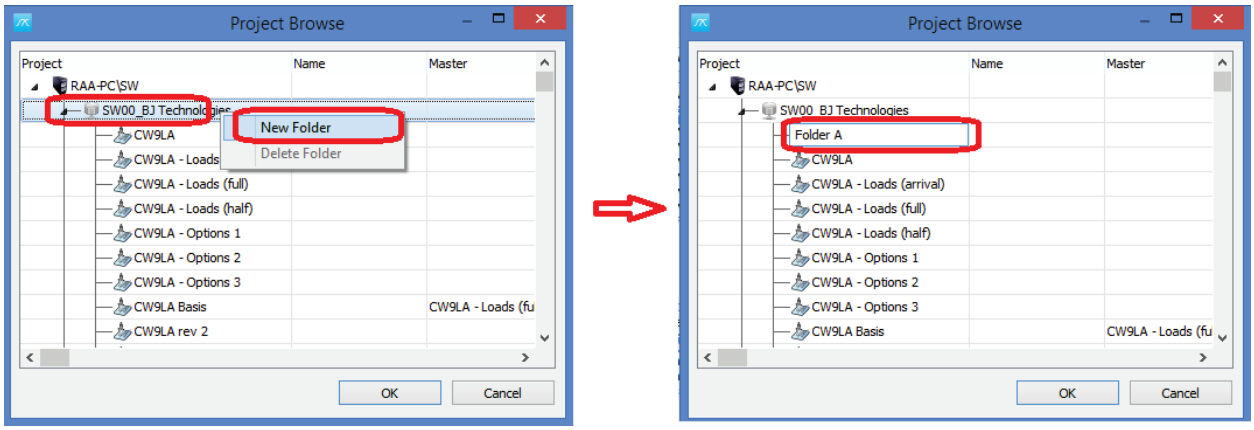
Step 3: Setting up a Catalogue Level in ShipWeight

In ShipWeight 13 a catalogue level is introduced to make it easier to organize project.

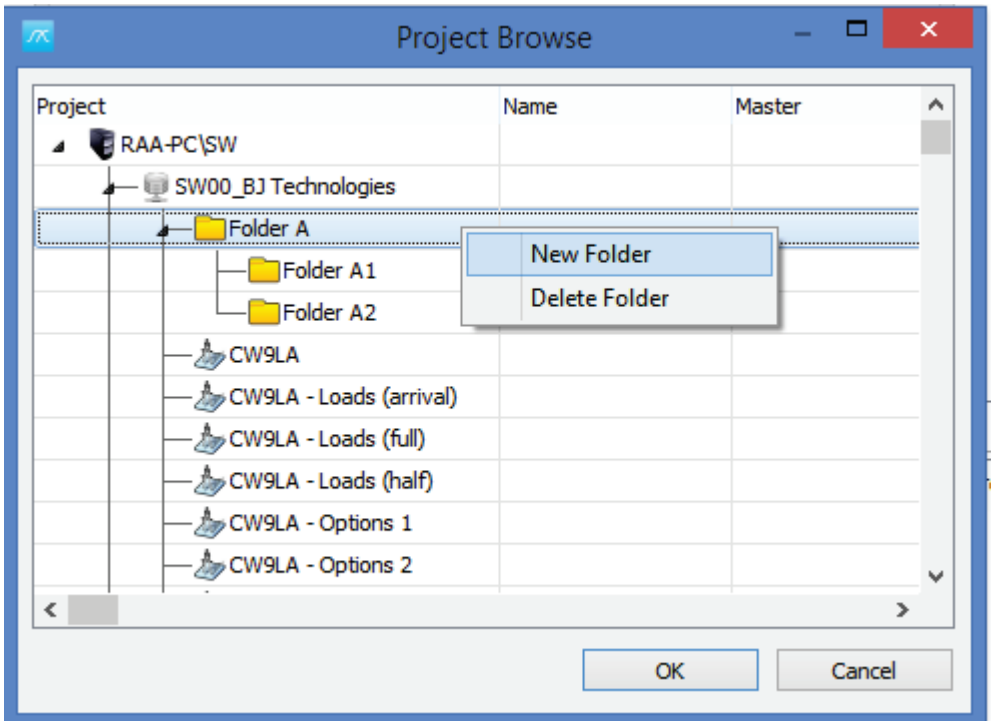
Open the “Open Project” windowue (from menu Project->Open…) and select the *Browse* […] button marked in red in the picture below.



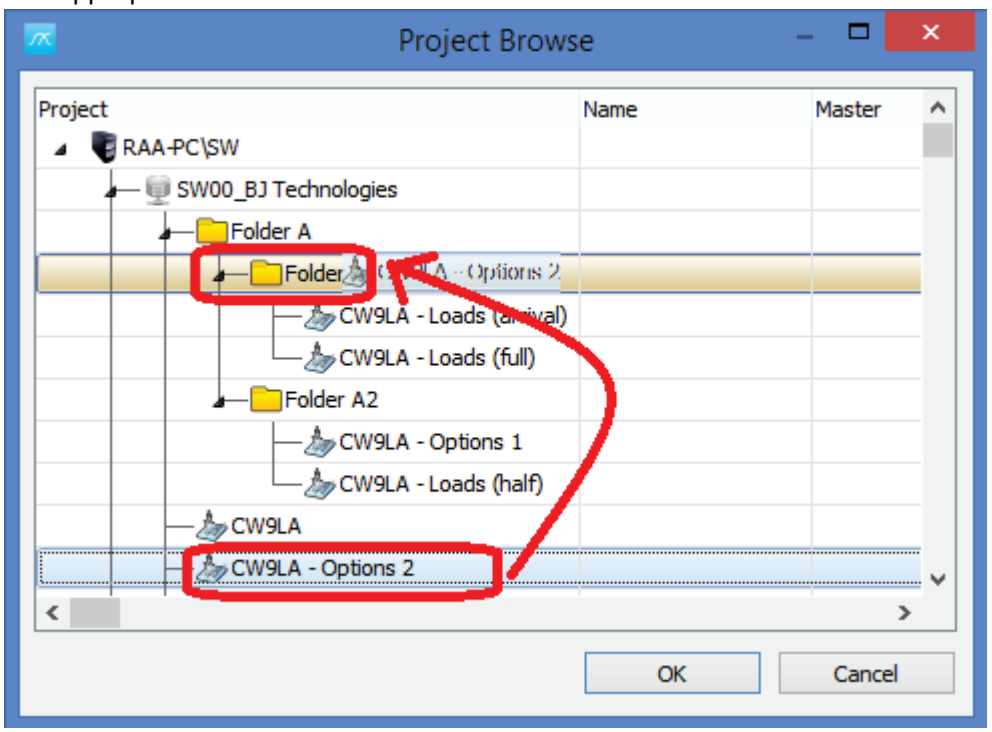
Select a database, right-click to select “New Folder” and type in a folder name of your choice.



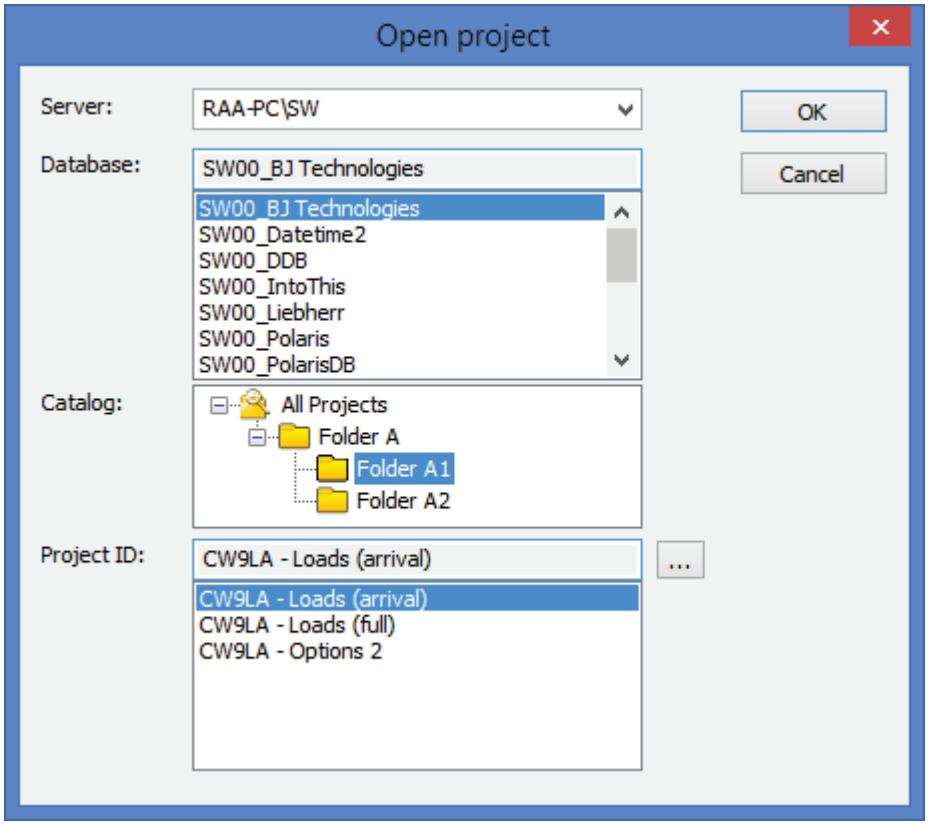
Continue in the same manner to create more folders and subfolders until you have the desired catalogue structure.



Move and organize projects into folders by selecting project IDs and “drag and drop” with the mouse into appropriate folder.

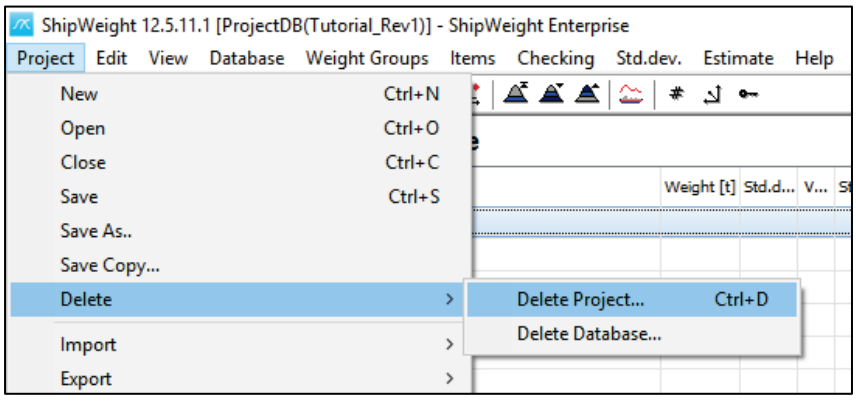


Select a project and click the “OK” button. Your project should now appear (and be selected) with the catalogue structure made for the projects in the database. Repeat for other databases.

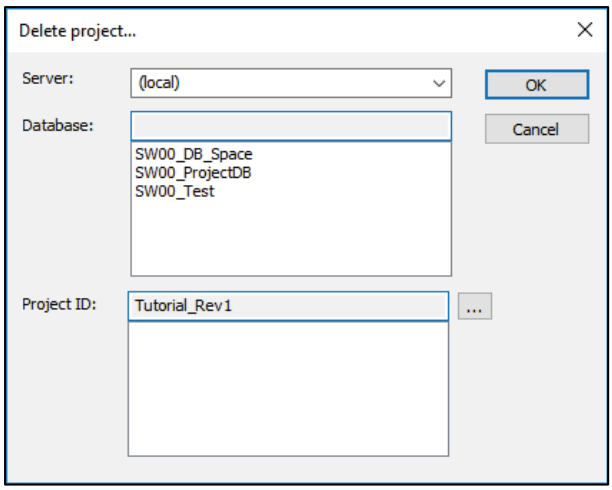


Step 4: Deleting a Project

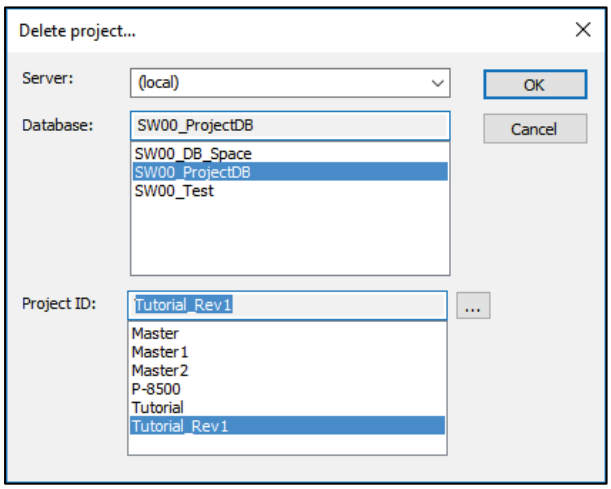
To delete a project, navigate to Project menu, select Delete, then Delete Project:



The Delete project… window will appear, which contains the same, the Server, Database and Project ID.

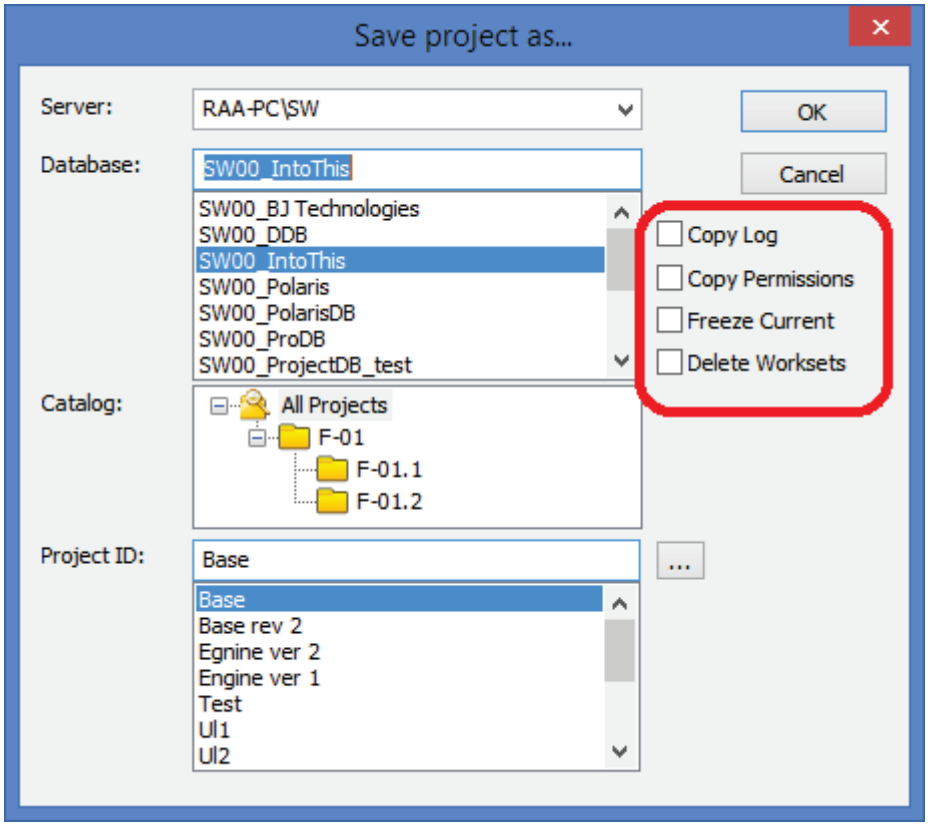


Select the Database SW00_ProjectDB, and the Project ID Tutorial_Rev1:



Click OK to delete it.

The Extra "Save As…" Options



- "Copy Log" – check this to copy the log data from the existing project and to the new one
- "Copy Permissions"- if this box is checked, the permission settings for user-groups for this project should be copied to the new project so there is no need to set new permissions.
- "Freeze current" should set all user-groups to be "Read-only" in the project you are saving from.
- "Delete workset" – when you start a new revision and you want to start with a clean set of worksets.

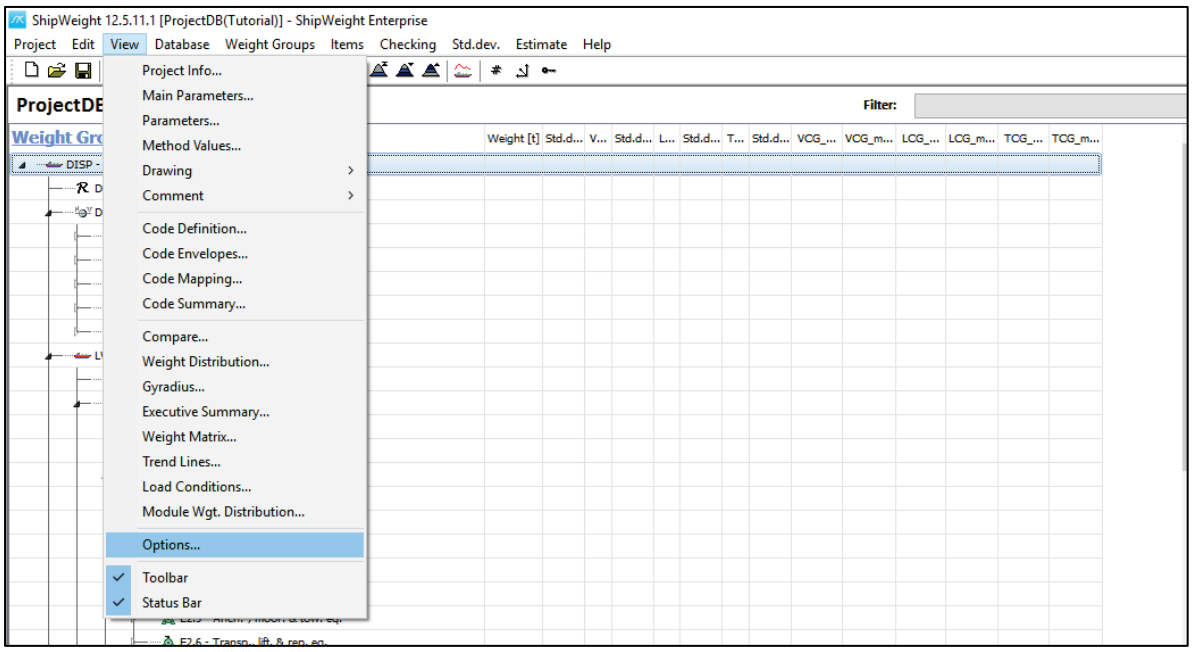
Customizing ShipWeight Project Options

This session will show how to:

- Change labels, decimals and units
- Set Project Properties
- Change Main Window fields/columns

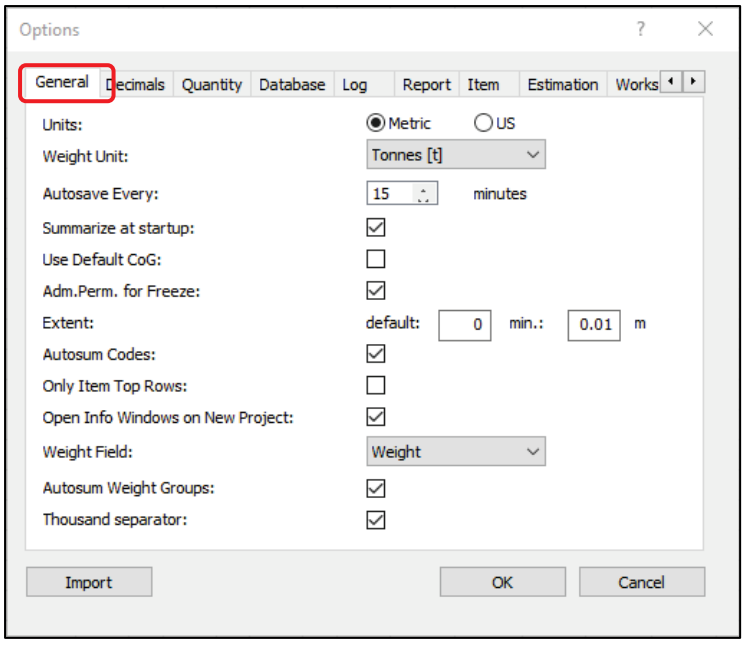
Step 1: Open the Options window

To open the Options window go into the View menu, and select Options…



This will bring up a window that has many tab-sheets, and in each sheet, you can set various options:

Step 2: Set Units and Startup Parameters



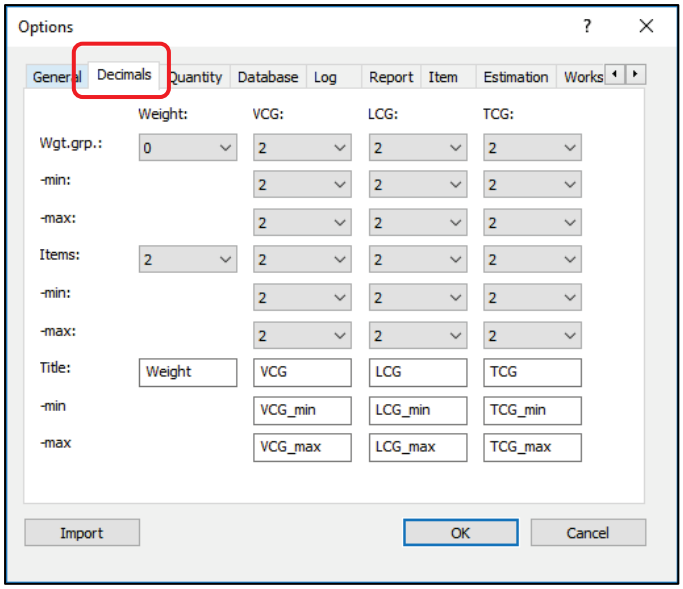
The first sheet is **General**, where you can select:

- Units in Metric or US
- The Weight Unit
- Whether it should summarize at startup etc.

Note especially the “Weight field” droplist. This is where you select the weight field to be summarized in the main window. By default, it is the standard weight field, but you can

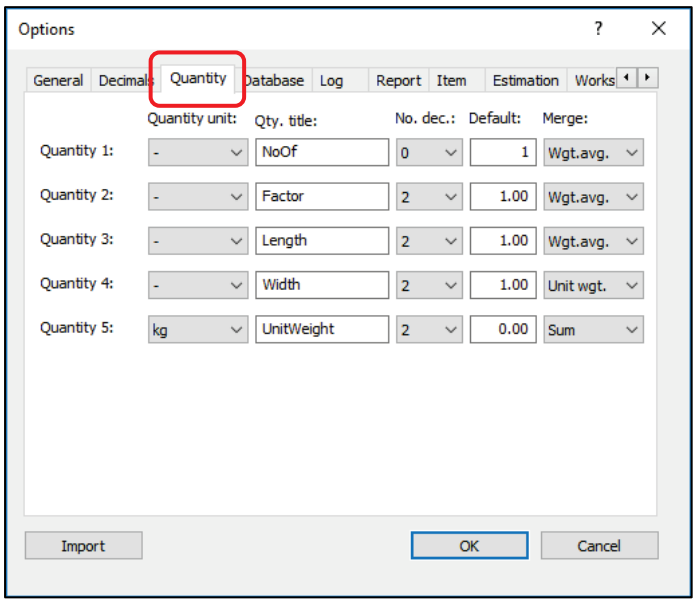
Step 3: Set Number of Decimals and Mass Properties Labels

The next tab is the **Decimals** settings, for the weight groups in the main window and for the detailed items in the Item window:



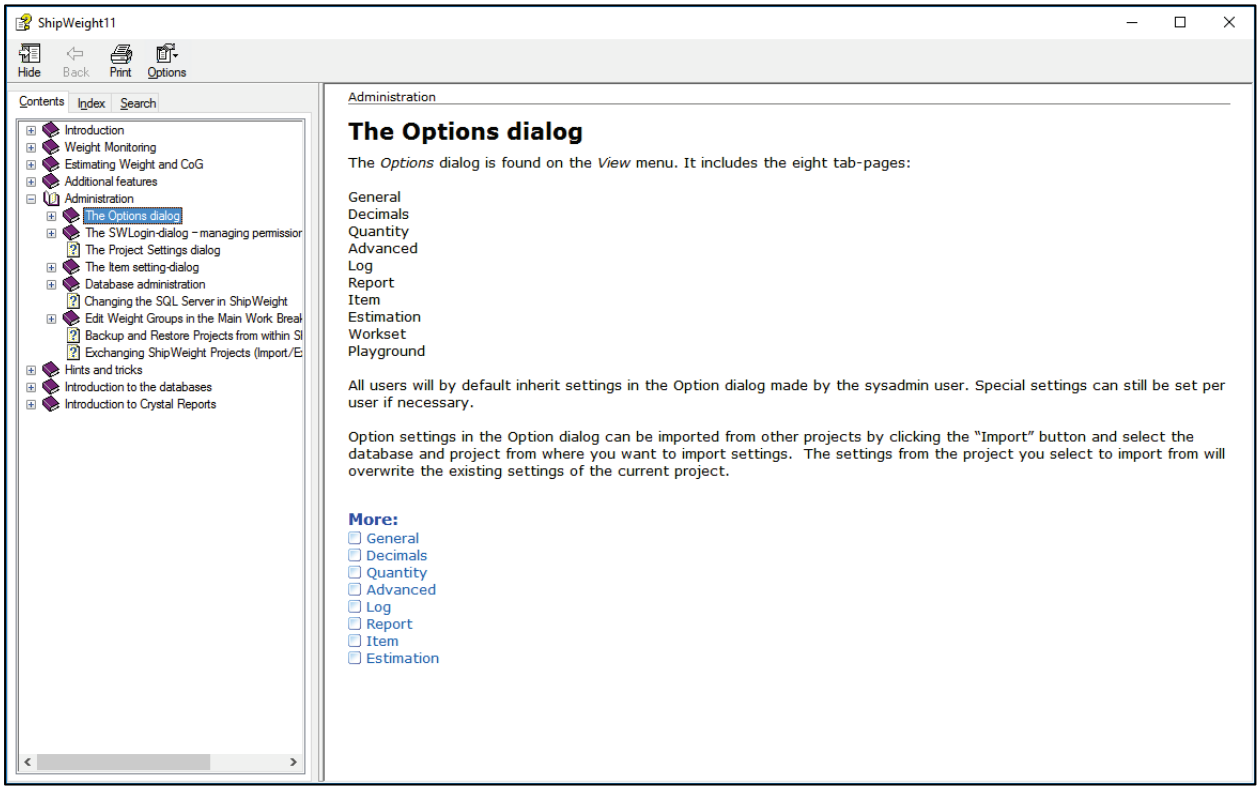
Step 4: Set Quantity Properties

Next you have names for **Quantity** and default settings for Quantities when a new row is added:



Refer to the Help File for Extra Information about the settings

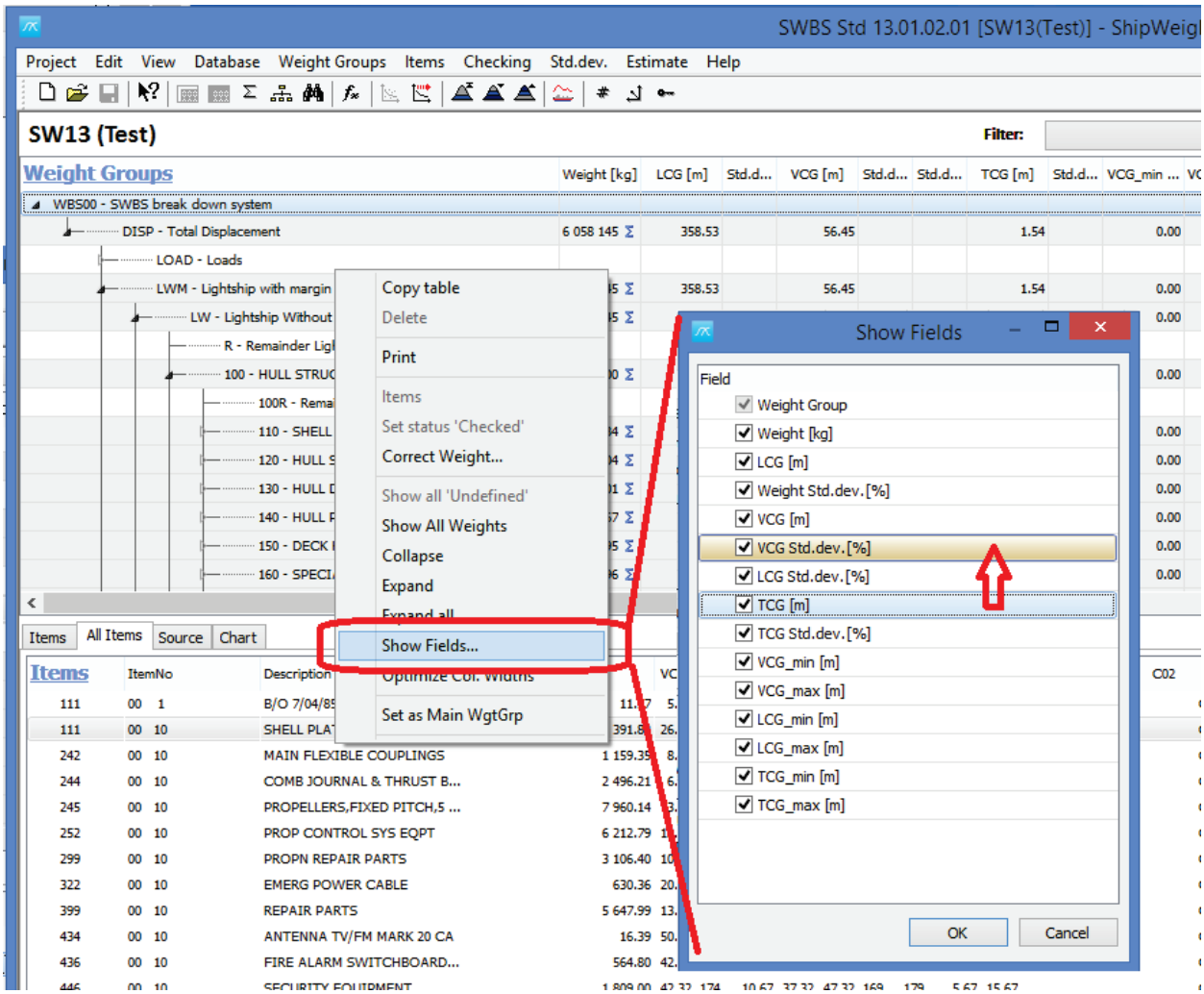
For more details about this settings hit the F1 key to bring up the context sensitive help, which will show you explanations for various tabs of the Options window:



Finally, in the Project Administration chapter, we will see how to navigate in the work breakdown structure.

Step 5: Set which Fields to Show and Field Order in Main Window

You can change the order of the column in the main window. In version 12 you could turn visibility on and off by right clicking in the main window treeview and select “Show fields”. You can now also rearrange the order by dragging and dropping the items in the list.



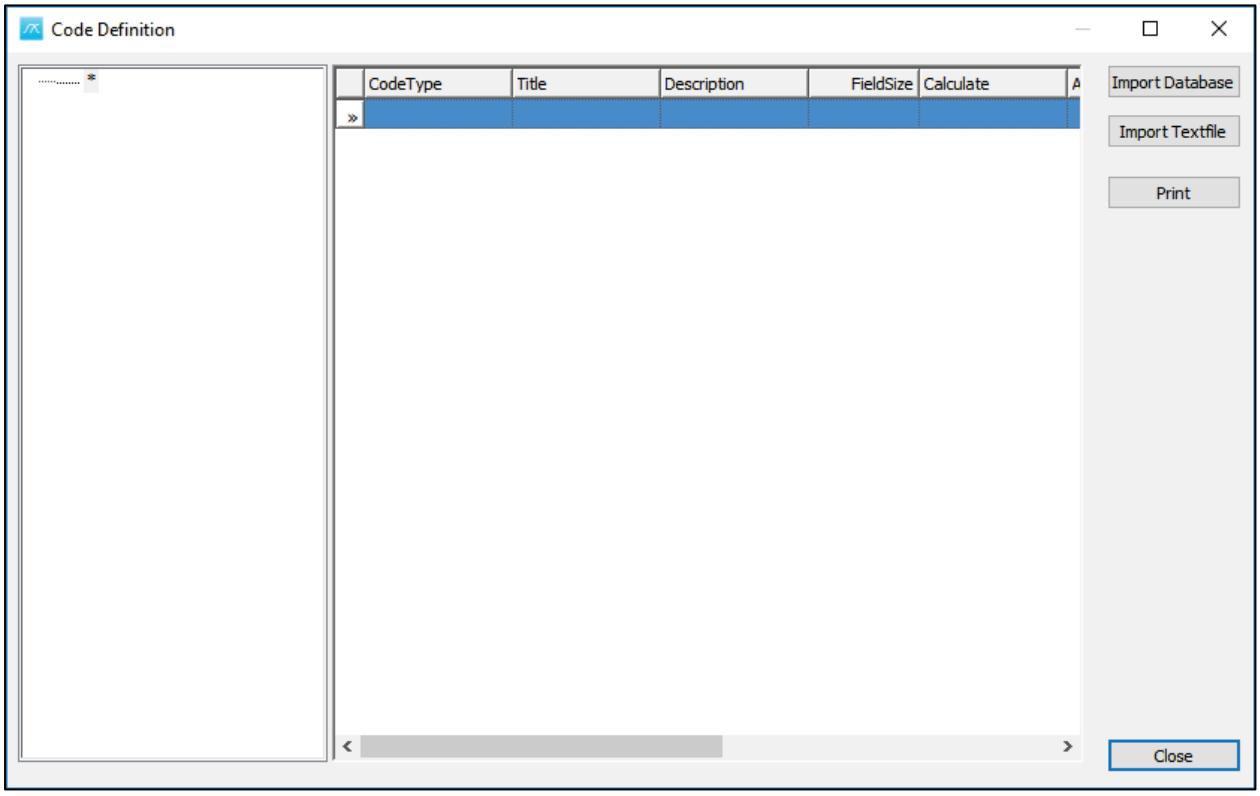
Setting Up Custom Codes and Item Settings

This section will show how to:

- Define Custom Codes
- Define Item Settings

Step 1: Open the Code Definition Window

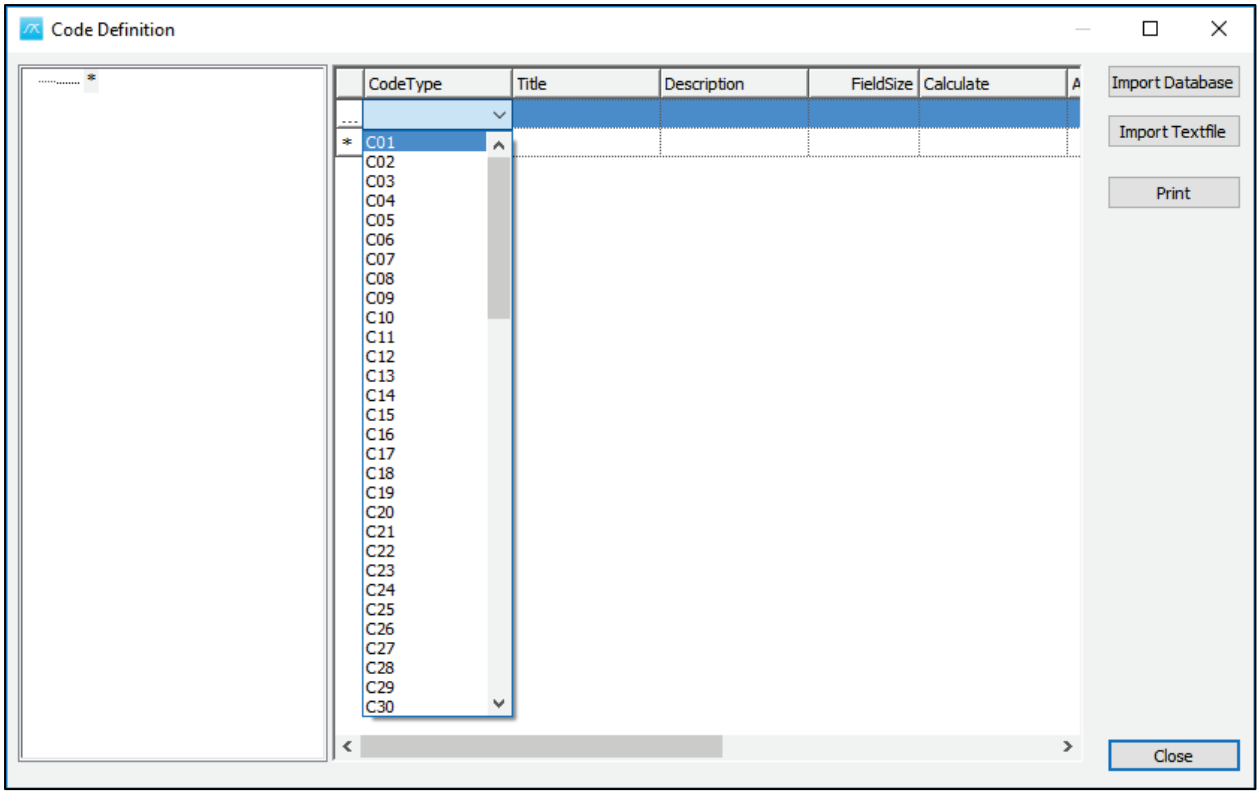
To open the Code Definition windw, select **Code definition…** on the View menu of ShipWeight window.



The Code Definition window contains a tree-view on the left side, and a table on the right side. It allows the user to define his own fields in ShipWeight.

Step 2: Define an Editbox Custom Code

To create a code, select the cell in the column "**CodeType**" of the table. The cell will become activated and editable. A new row automatically will be added, and the cell will turn into a combo box (editable dropdown list). Next, activate the dropdown of the combo box and select the ID of the custom code you want to make e.g. ***C01***.



Next, fill in the following fields:

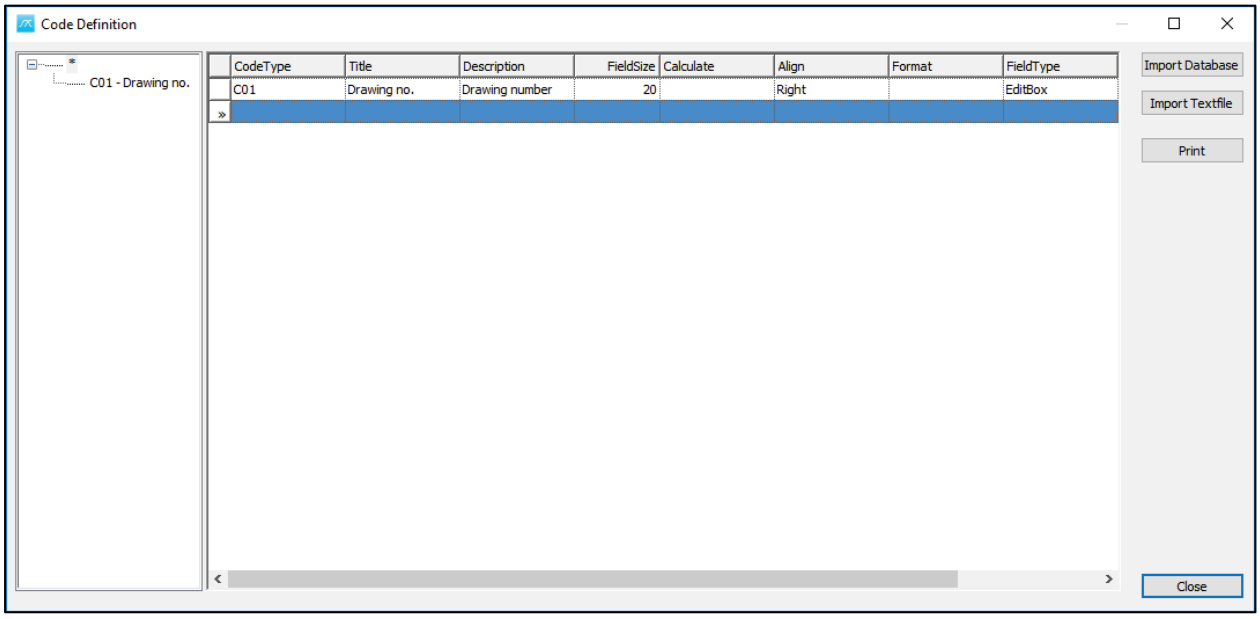
Field	Value	Description
Title	Drawing no.	*Title will show above field in Item dlg.*
Description	Drawing number	*Information only, no effect*
FieldSize	20	*Number of characters allowed in field*
Calculate	(leave empty)	*Formula for calculated codes (Leave empty)*
Align	Right	*Alignment of value in Item dlg.*
Format	(leave empty)	*Formatting of calculated fields (Leave empty)*
FieldType	EditBox	*Specify a standard editable field*

To finish the registration of code ***C01***, click with the mouse on the empty line in the table. You can make sure that the code has been registered by checking that it is added to the tree left of the grid. Click the minus/plus sign to (un)expand the tree. The FieldType in this case is ***EditBox***. This means that the custom code field will be an editable box where the user may type in freely.

The other Fieldtypes are:

- ListBox – the user must select value for the field from a dropdown list of predefined values
- ComboBox – the user may select value for the field from a dropdown list of predefined values or type in freely

• ReadOnly – the value cannot be changed by the user

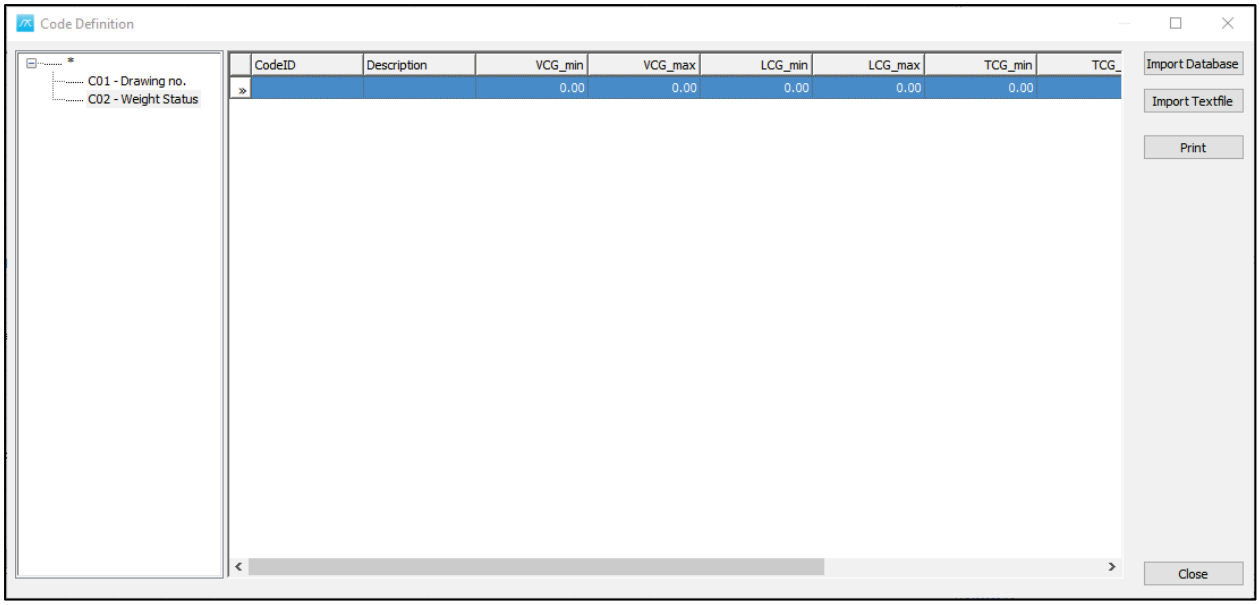


Step 3: Define a Listbox Custom Code

In the same way, add the code **C02** with the following values:

Field	**Value**
Title	Weight Status
Description	Weight Status Code
FieldSize	20
Calculate	(leave empty)
Align	Left
Format	(leave empty)
FieldType	ListBox

Next, we will add code values to the **Weight Status code**. In the tree-view, select code 'C02 – Weight Status'. An empty table for adding code values will appear on the right side of the tree-view.



Select the row of the table and fill in these values:

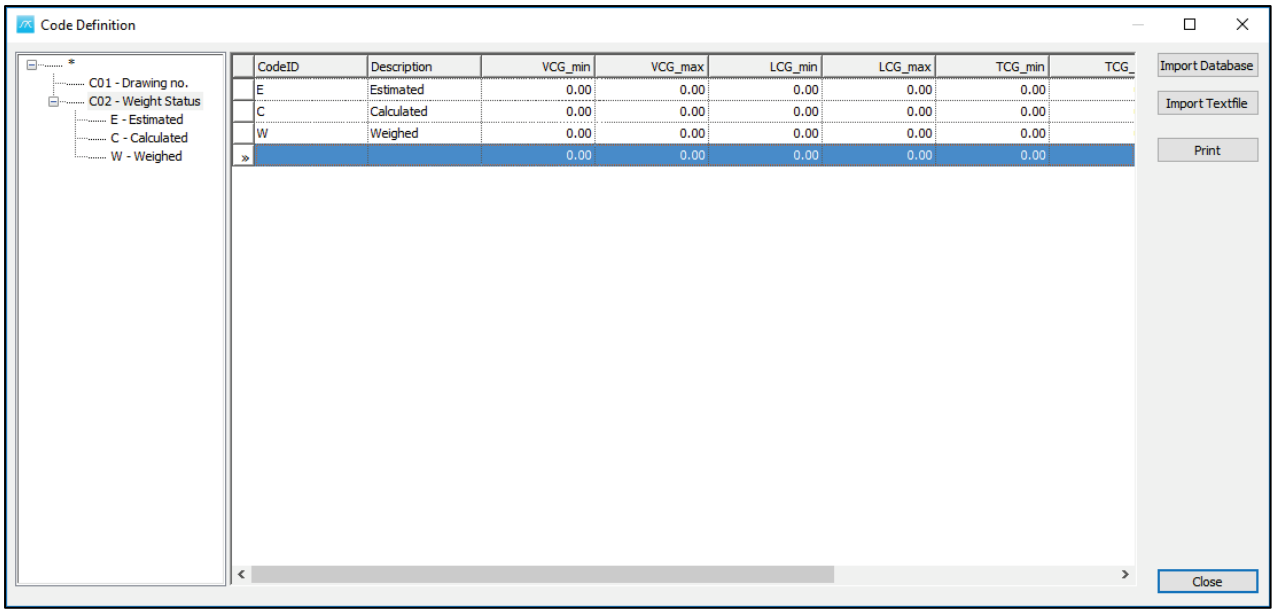
Field	Value
CodeID	E
Description	Estimated
Factor	1.1

Leave the rest of the fields empty, and click on the next row in the table. Enter two more code values:

Field	Value
CodeID	C
Description	Calculated
Factor	1.05

Field	Value
CodeID	W
Description	Weighed
Factor	1.02

Finish registering the code value by clicking the last row in the table with the mouse.

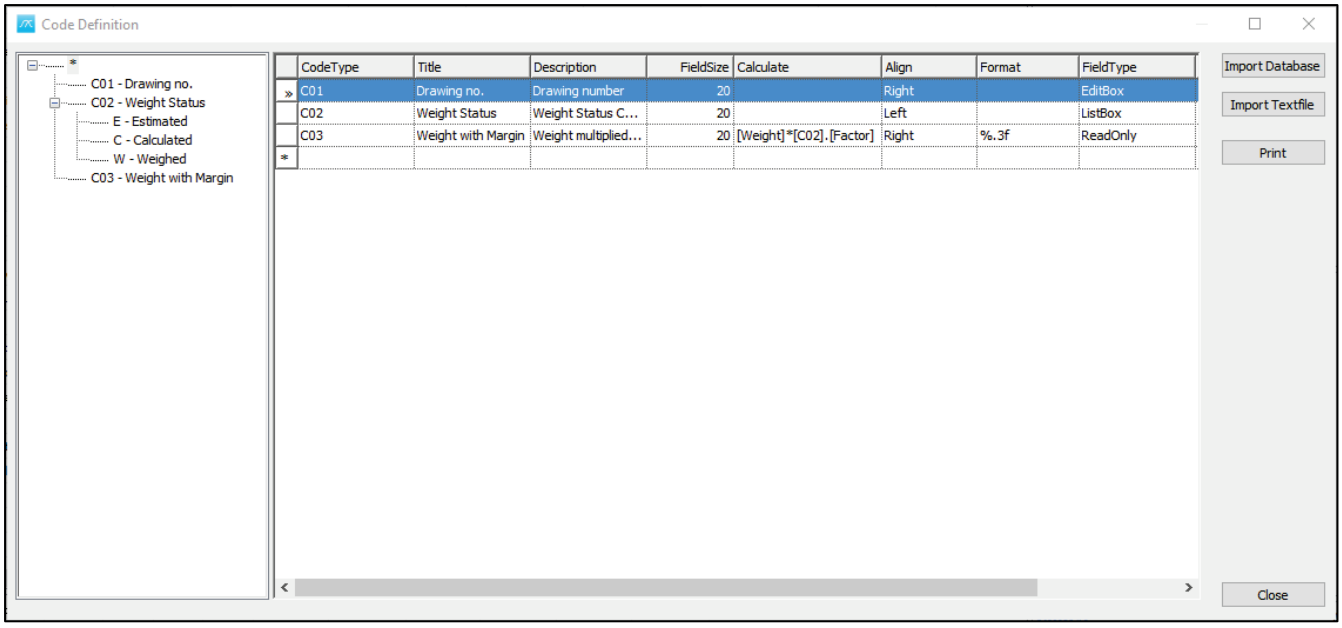


Step 4: Define a Calculated Custom Code

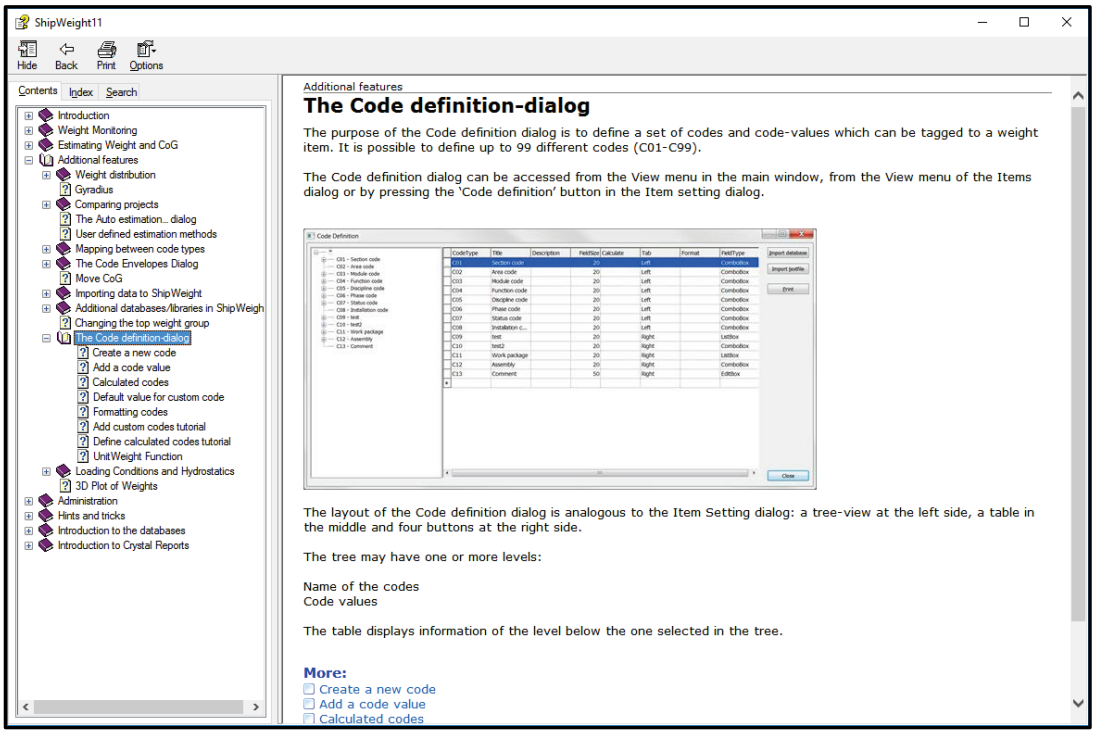
Next, click the topmost asterisk in the tree-view to display the Code Definition table. Add code **C03** with the following values:

Field	Value
CodeType	C03
Title	Weight with Margin
Description	Weight multiplied with margin based on Weight Status code
FieldSize	20
Calculate	[Weight]*[C02].[Factor]
Align	Right
Format	%.3f
FieldType	ReadOnly

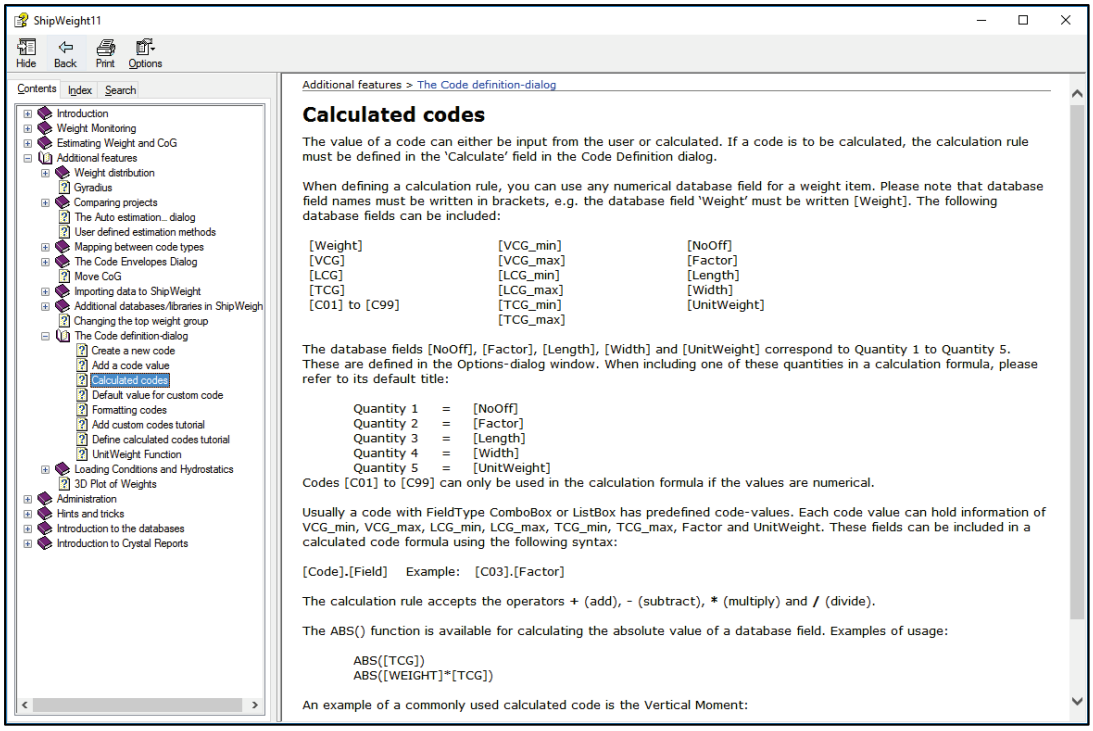
Click the empty row of the table to finish off the registration of **C03**.



Hit F1 button to bring up the Help file for Code definition window:



In the Help file, select the Calculated Codes to find all the options to use for the calculated fields and how to set the calculations:



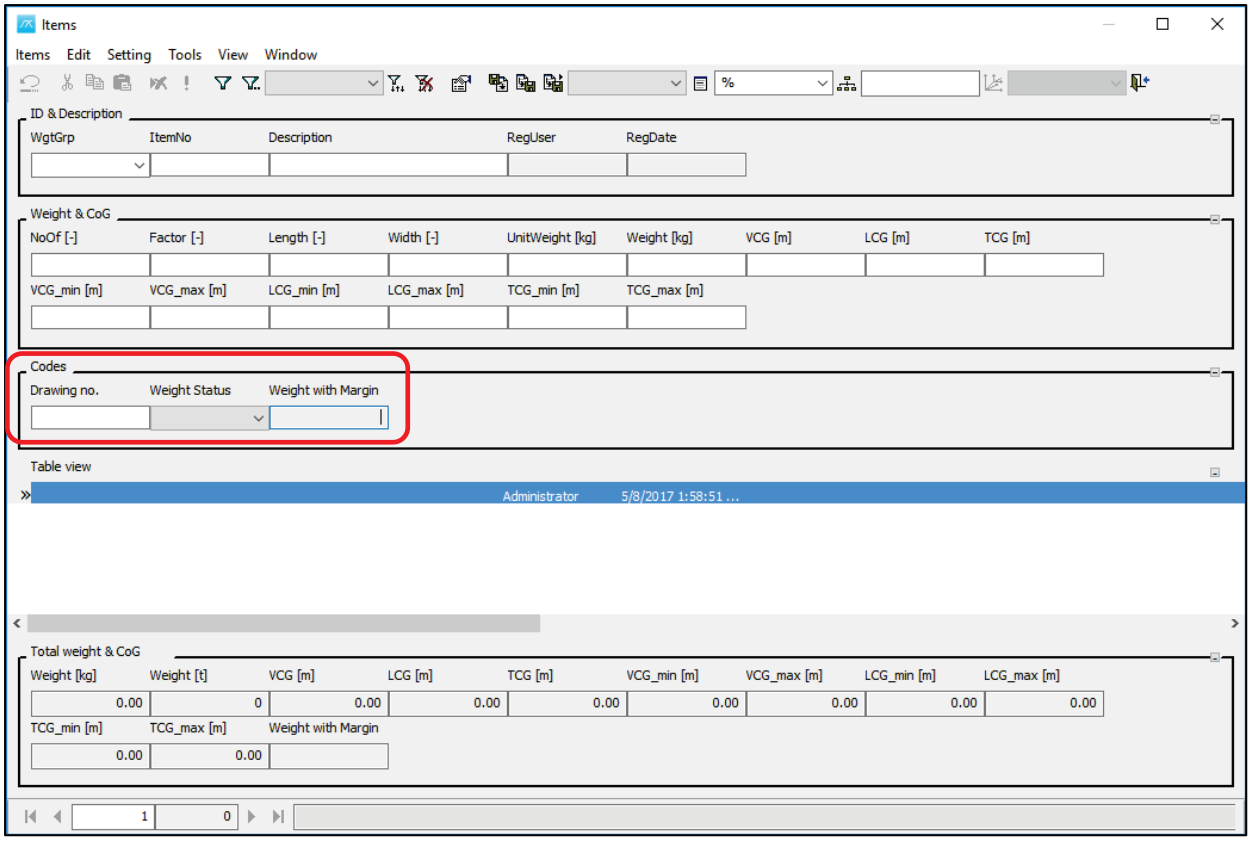
Finally, close the Code Definition window.

Step 5: Check the Added Codes in the Item Window

Open the Items window, in ShipWeight main window select Items and choose List Items -> All…

Alternatively, press the 'Item level' button on the toolbar: 

The Items window now opens in default mode. In the Items view, it can be noticed all of the added codes:

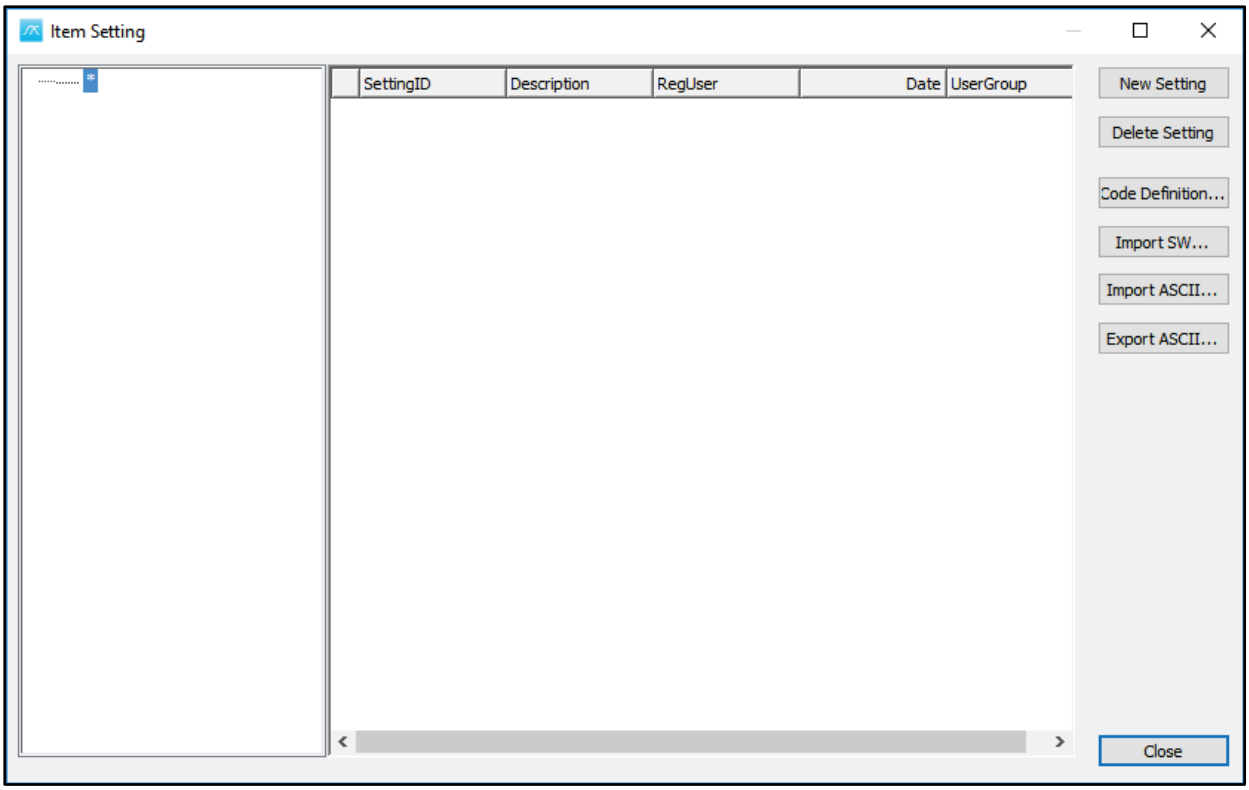


The Code Definition window can be reopened anytime from Items window, View menu -> Code Definition.

Step 6: Open the Item Setting Window

In the Item Settings window the user will have the possibility to take these codes and move them to different positions of the Items view, and learn how to generalize and customize this view.

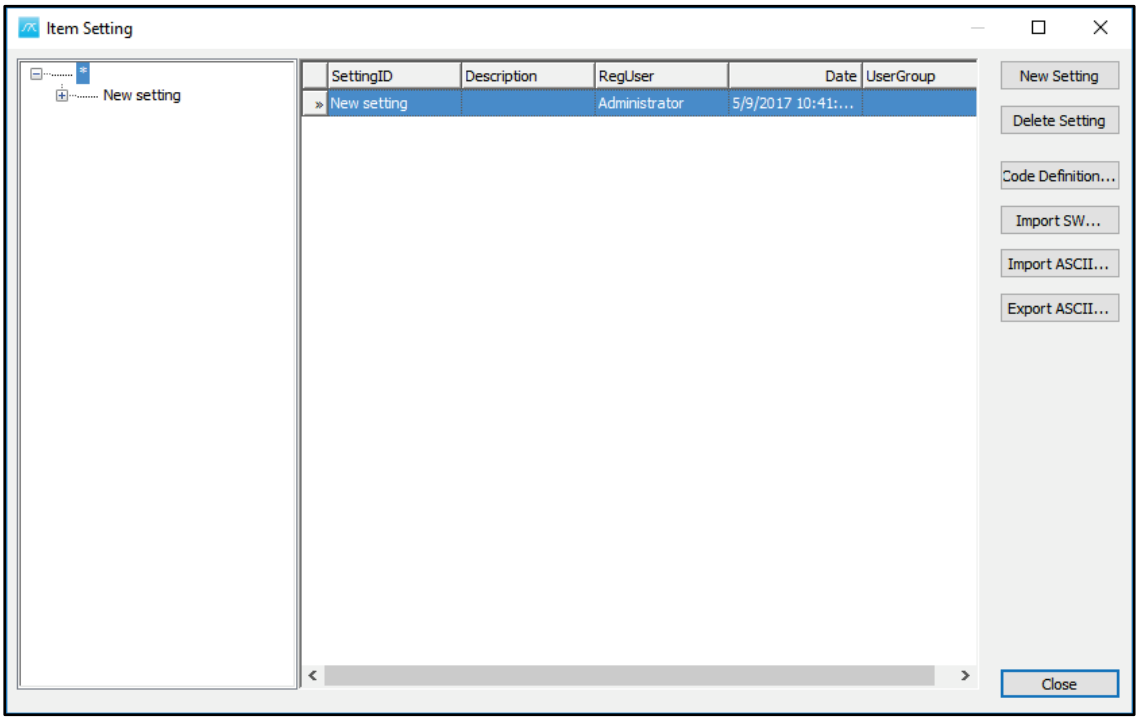
In the Items window, select Item settings… in the Setting menu to display the Item setting window. Alternatively, press the Item setting… button on the toolbar. The Item setting window controls the layout of the Item window.



Step 7: Create A New Setting

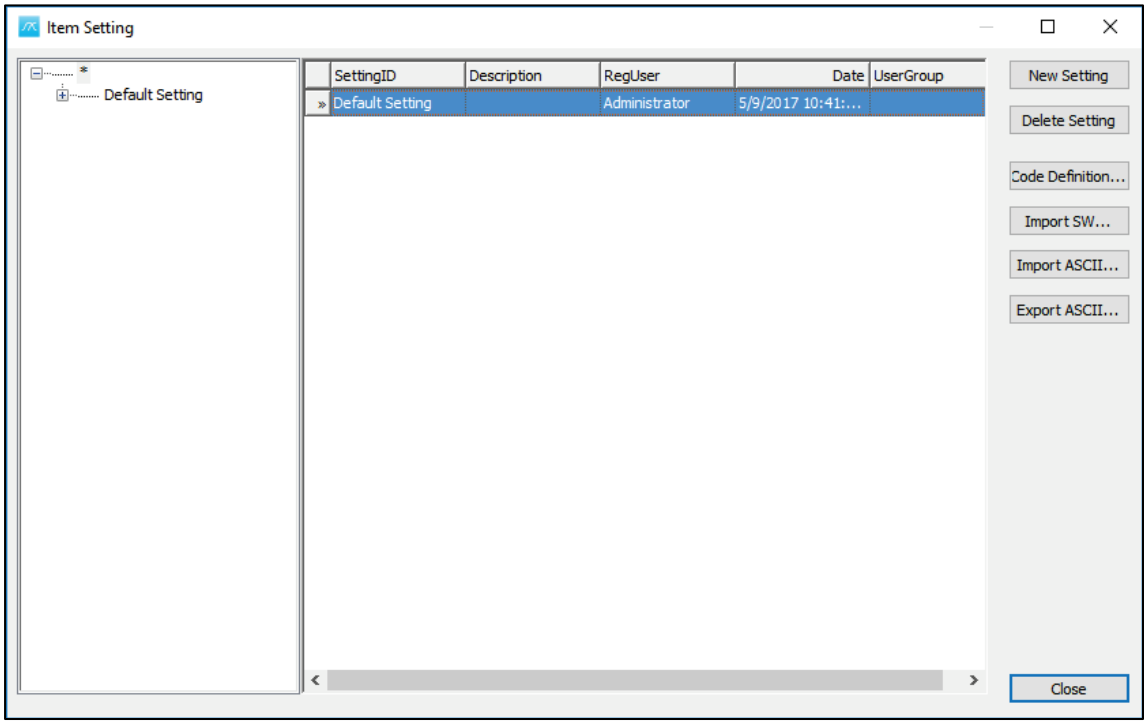
After the Item Setting window pops up, to start creating a new setting, press the **New Setting** button. This will generate the starting point for the new setting.

In the tree-view on the left side, click the plus sign next to the asterisk to expand the tree. A setting named '**New setting**' has been created. Your window should then look like this:

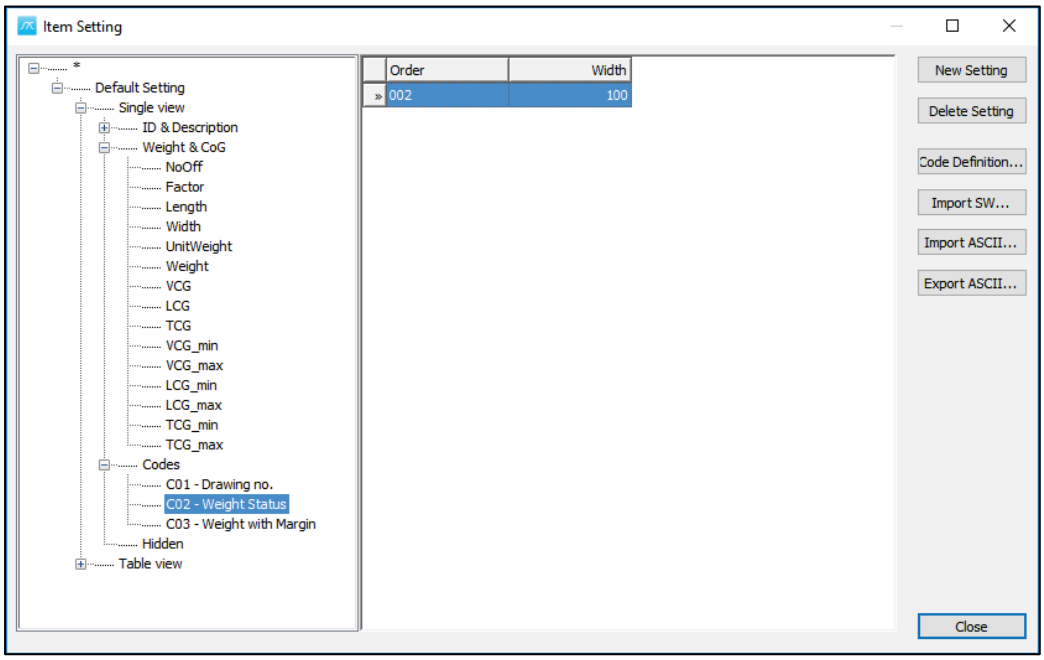


Step 8: Define the Settings

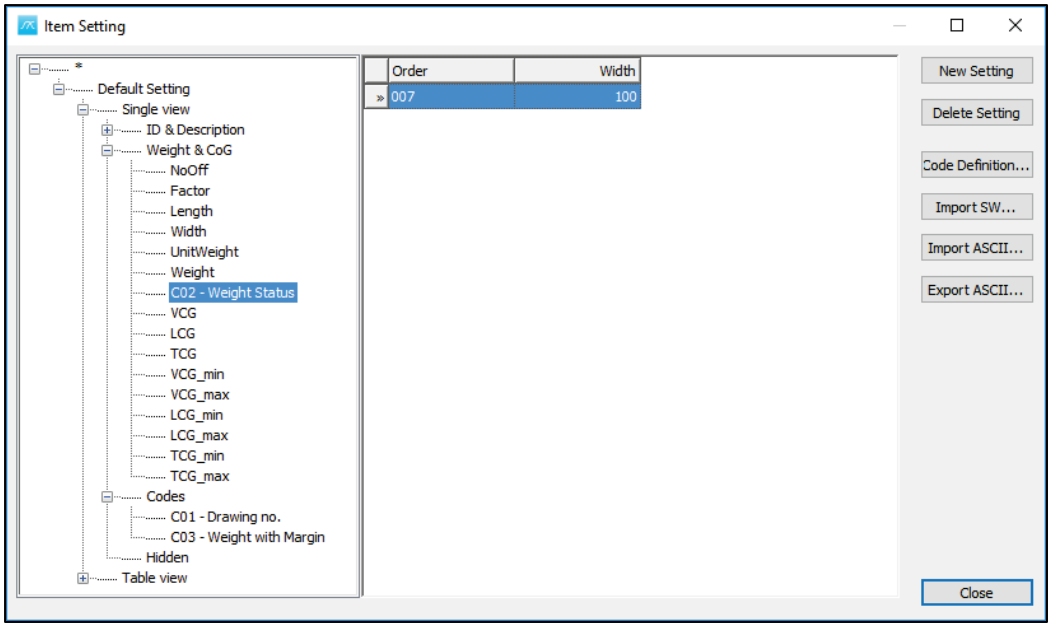
Make sure the topmost asterisk is selected in the tree. Click the 'New setting' cell in the SettingID column of the table. Change the Setting ID from '**New setting**' to e.g. '**Default Setting**':



Next, expand the tree further by clicking the plus sign in front of 'Default Setting', 'Single view', 'Weight & CoG' and 'Codes'. Select 'C02' in the 'Codes' branch of the tree:



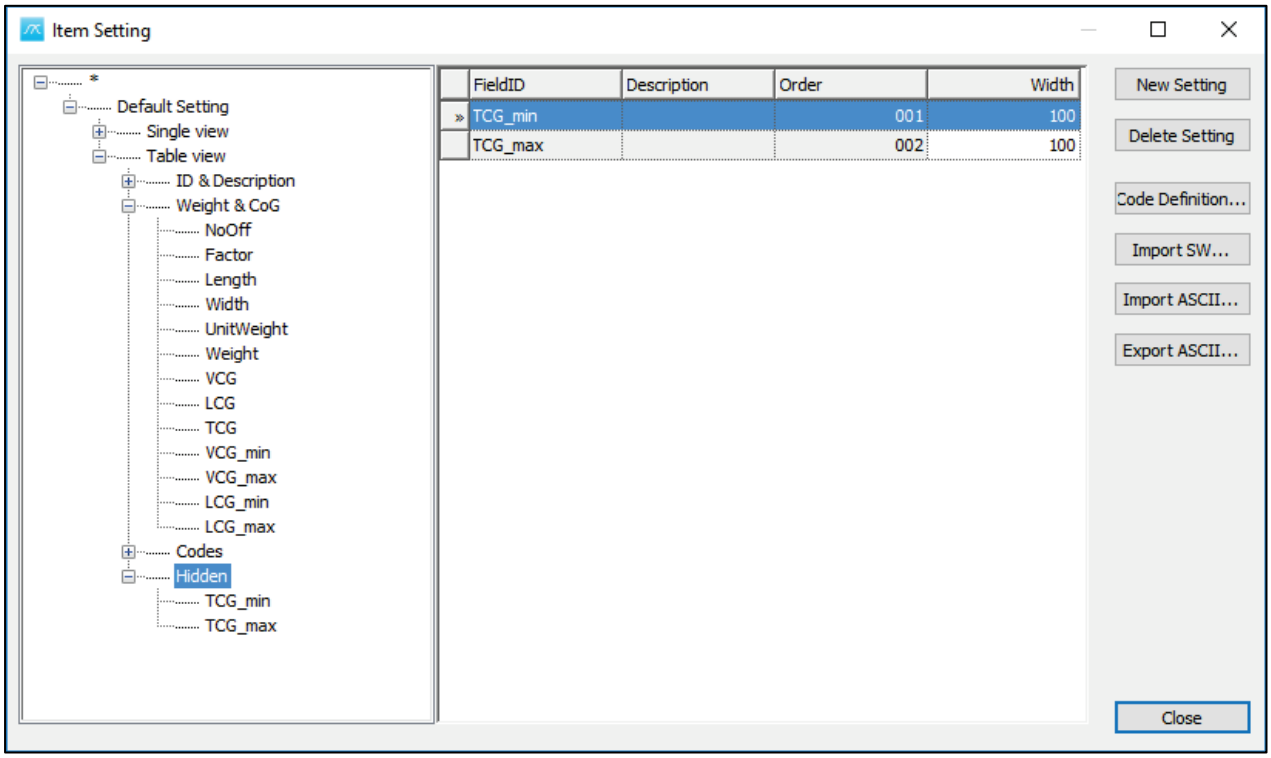
Using the mouse, drag '**C02**' from the 'Codes' group and drop it on Weight in the 'Weight & CoG' group. **C02** will now be placed directly after the Weight field in the Single Record area of the Item window:



Now go to Table view.

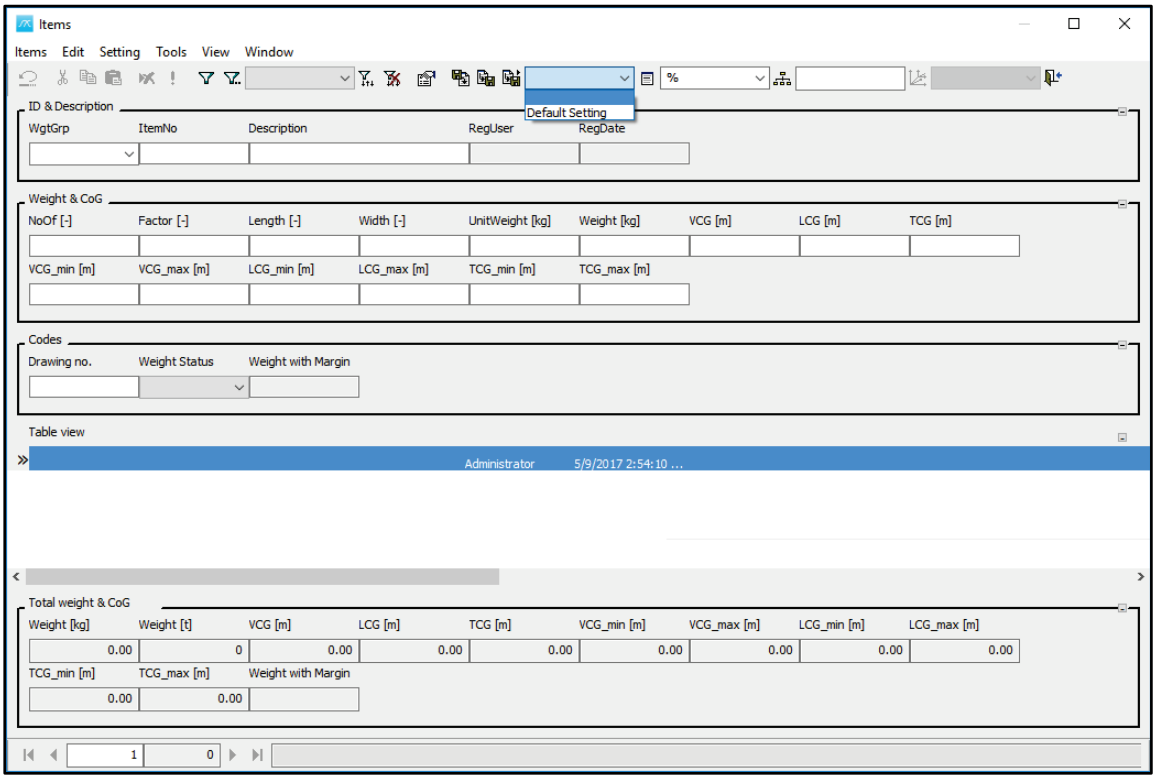
Expand the 'Table View' branch by clicking the plus sign in front of it, and then the 'Weight & CoG' branch. Select 'TCG_min' with the mouse. Drag and drop it in the 'Hidden' group. Repeat this for TCG_max.

The TCG_min and TCG_max fields will now be hidden in the Table View area of the Item window.

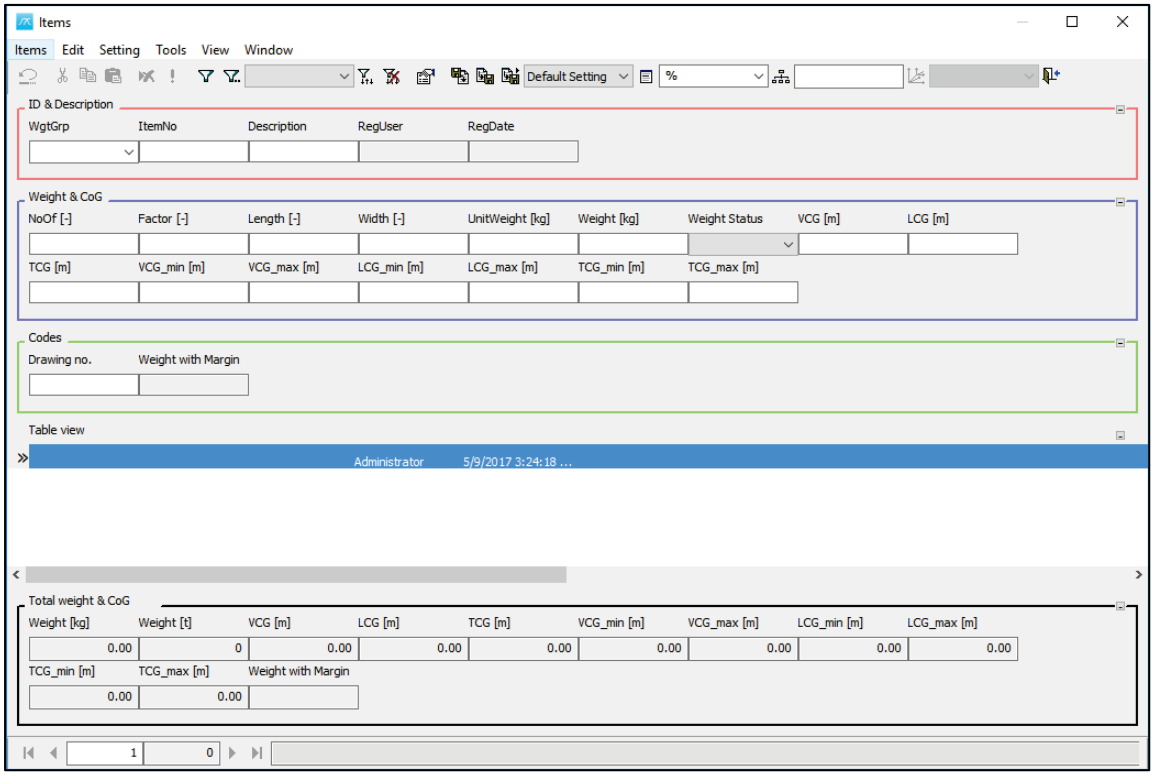


Step 9: Active the New Setting in the Item Window

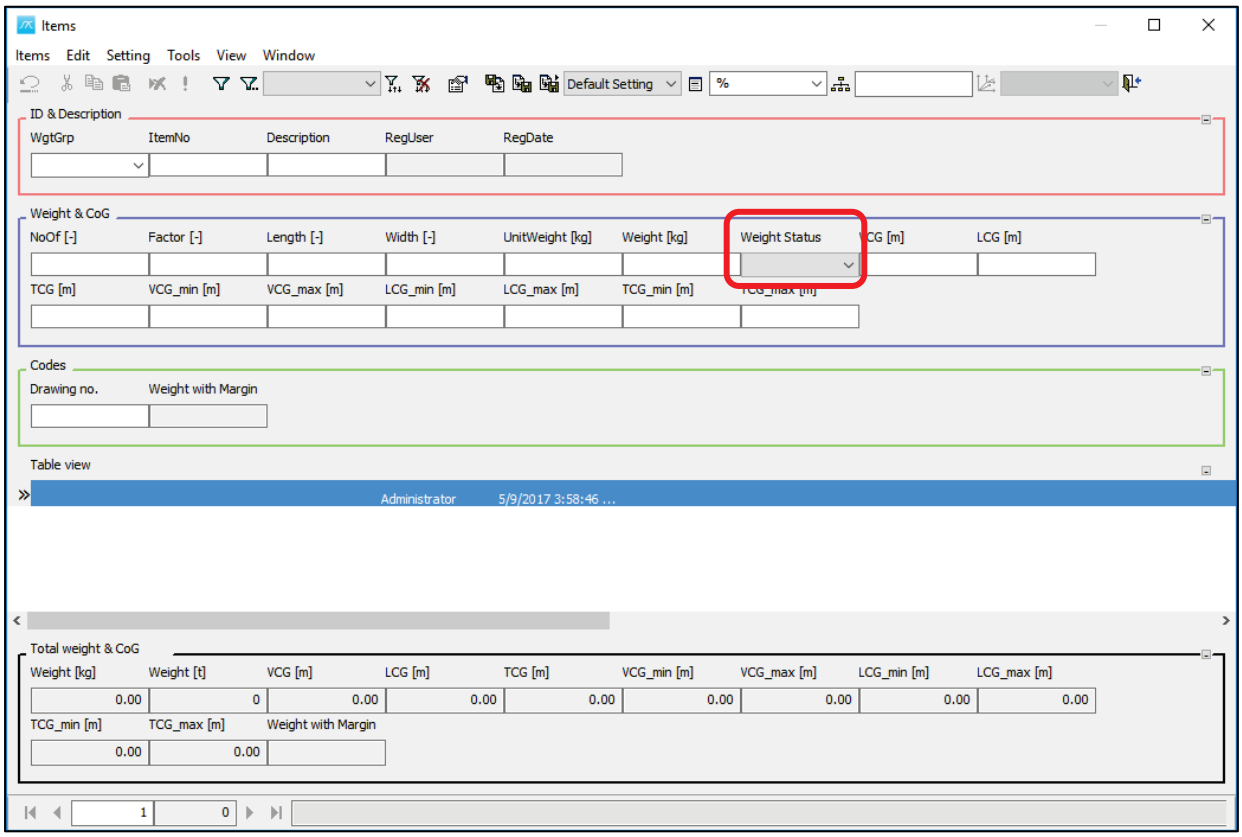
To activate the new setting ‘Default Setting’, close the Item Setting window, and then select ‘Default Setting’ from the ‘Setting’ dropdown list on the toolbar:



Now, the Item window should look like this:

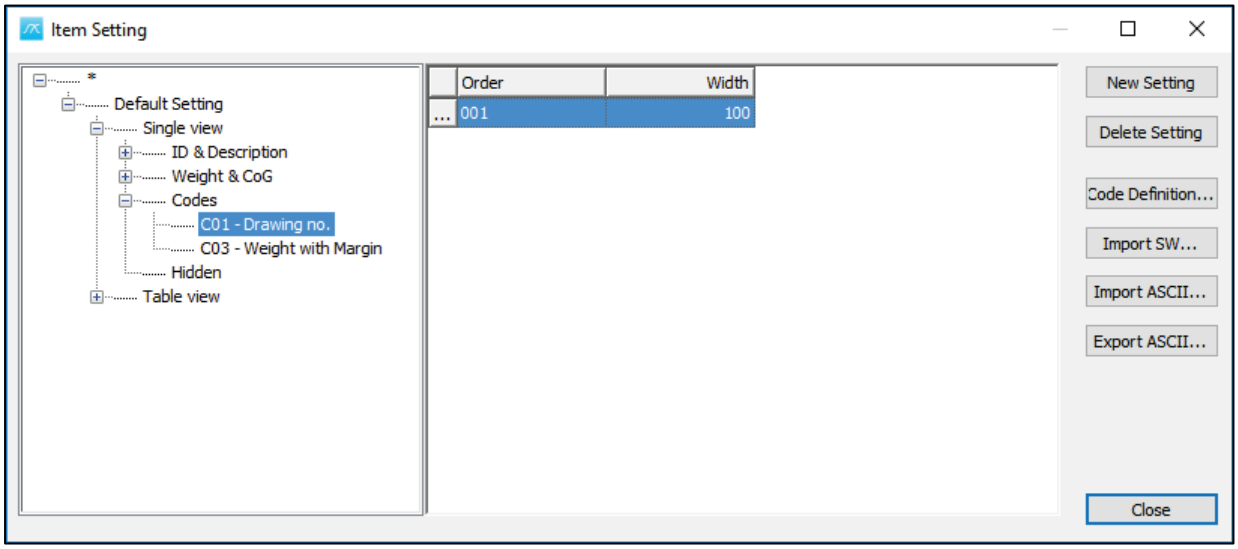


Based on the changes made in the Item Settings window, now it can be noticed that C02 code (Weight Status), is located in the Single View: Weight & CoG:

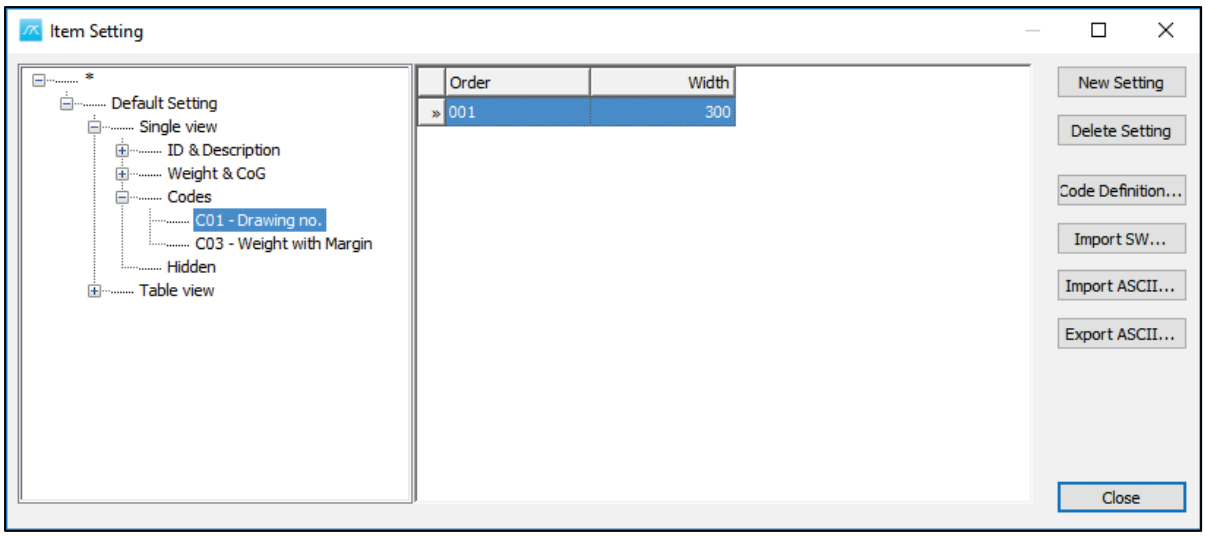


Step 10: Make a Change to the Item Setting by Editing It

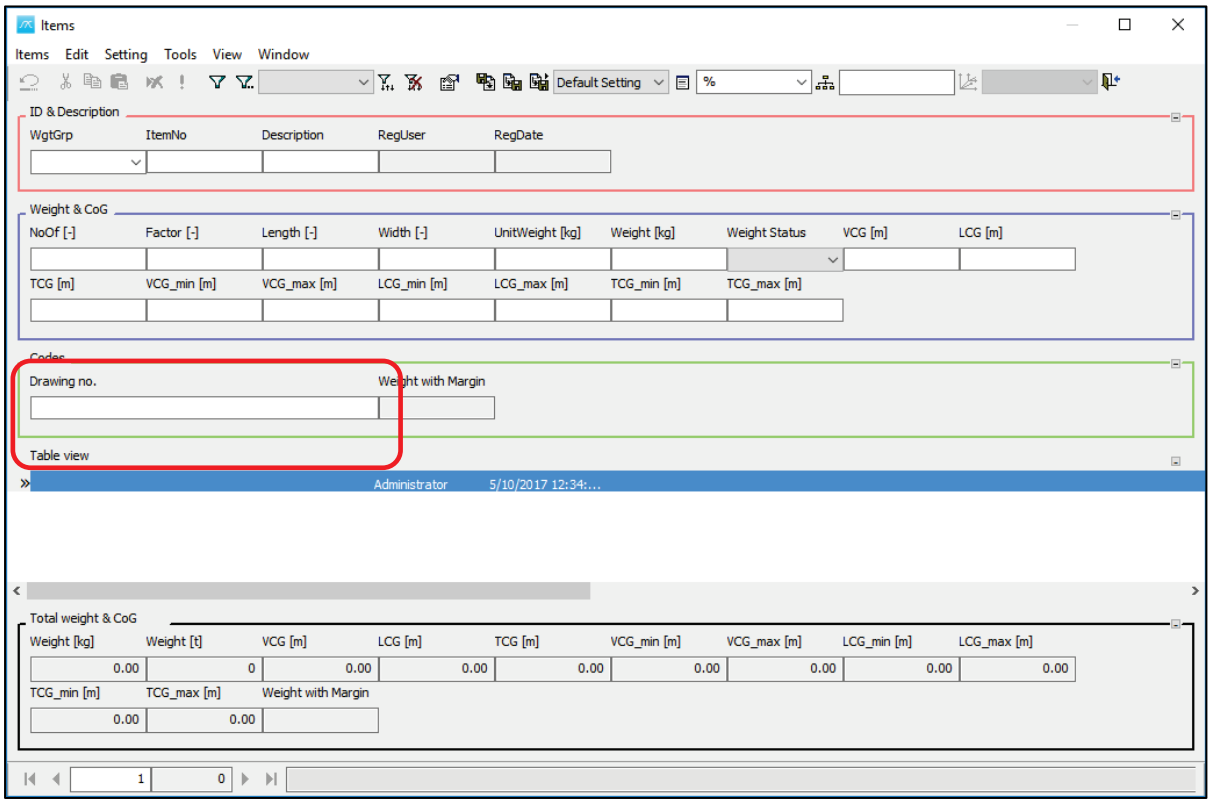
To change the width of items in the Single View, open the **Item Settings** window, go to **Single view**, then **Codes**, and click on **C01-Drawing no**.



Now change the standard C01 code Width from 100 to 300:



The result will be:



As long as the Item Setting ‘Default Setting’ is selected in the drop list, any changes that the user will do to the ‘Item Setting’ window will automatically be applied to the ‘Items’ window.

Enter Weight Data Manually

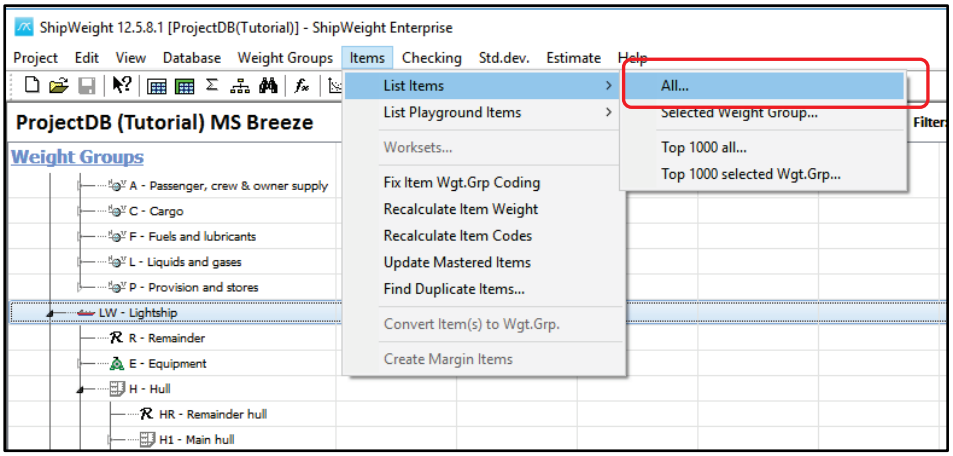
In this session:

- Navigating in the main window
- Manual input of weight data
- Item History and Deleted Items

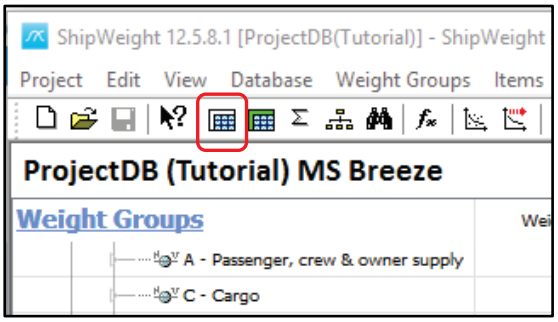
Step 1: Open the Item Window

There are three ways to open the item window:

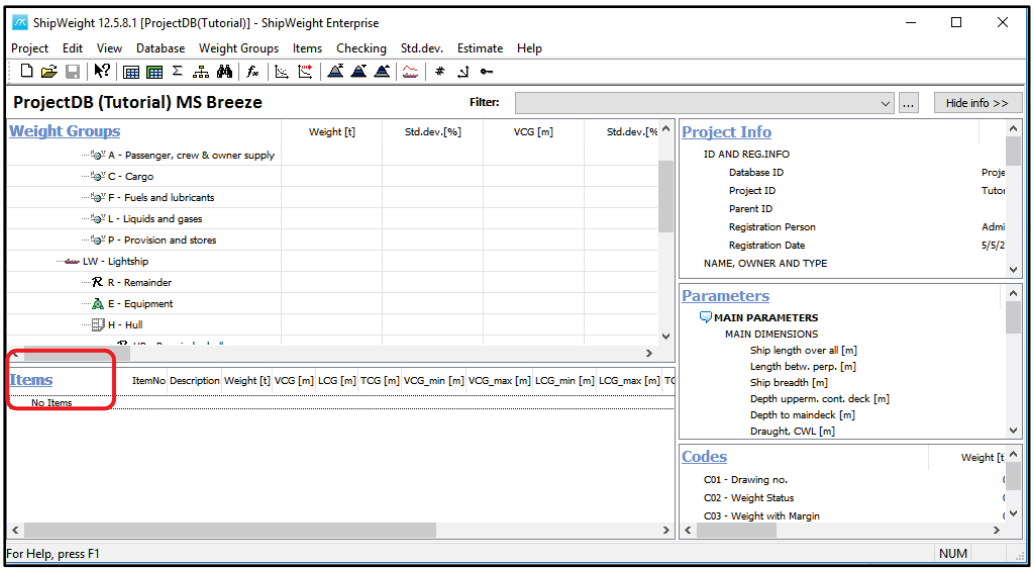
Select Items and choose List Items -> All



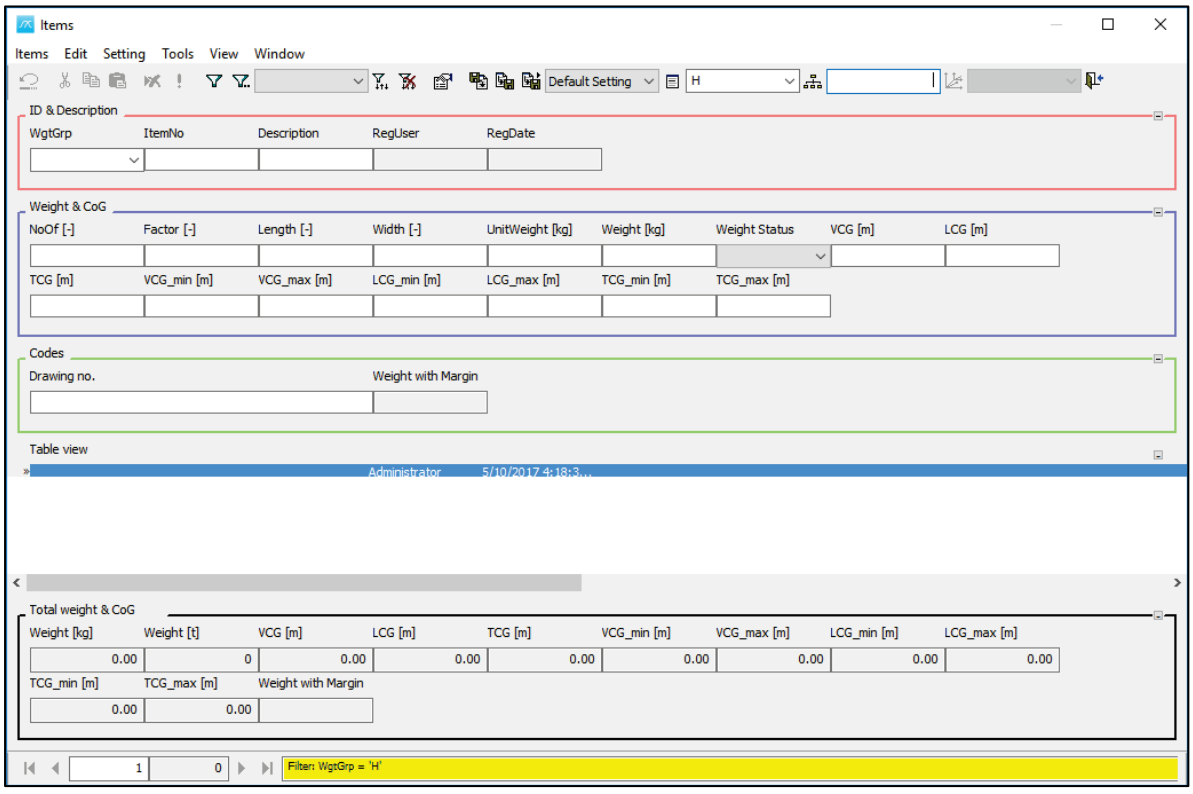
Alternatively, press the 'Item level' button on the toolbar:



Or select Items header on this preview window:

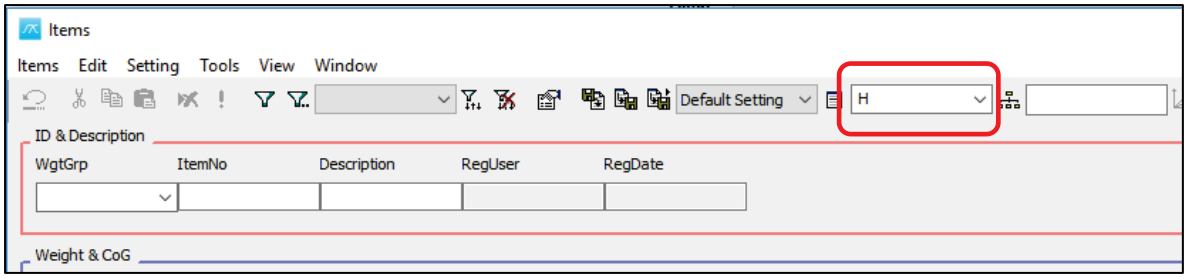


Choose one of the specified options to open the Items window:



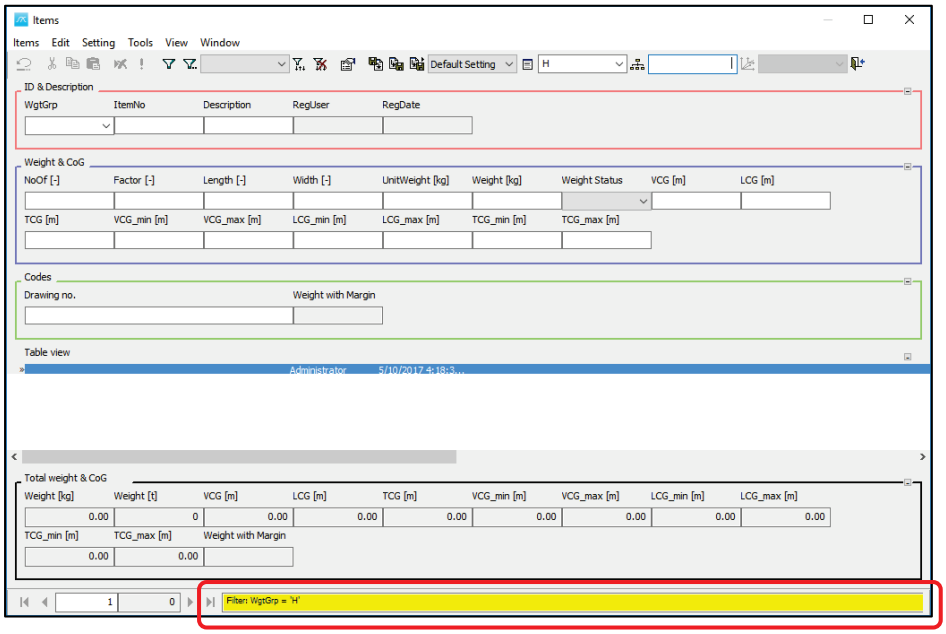
It is very important to know the link between the selected weight group in the main window and the actual item window that pops up.

When the Items window was opened, the focus was on the SWBS group H – Hull, and this means that H is now opened in the item window. In the weight group filter we can see H:



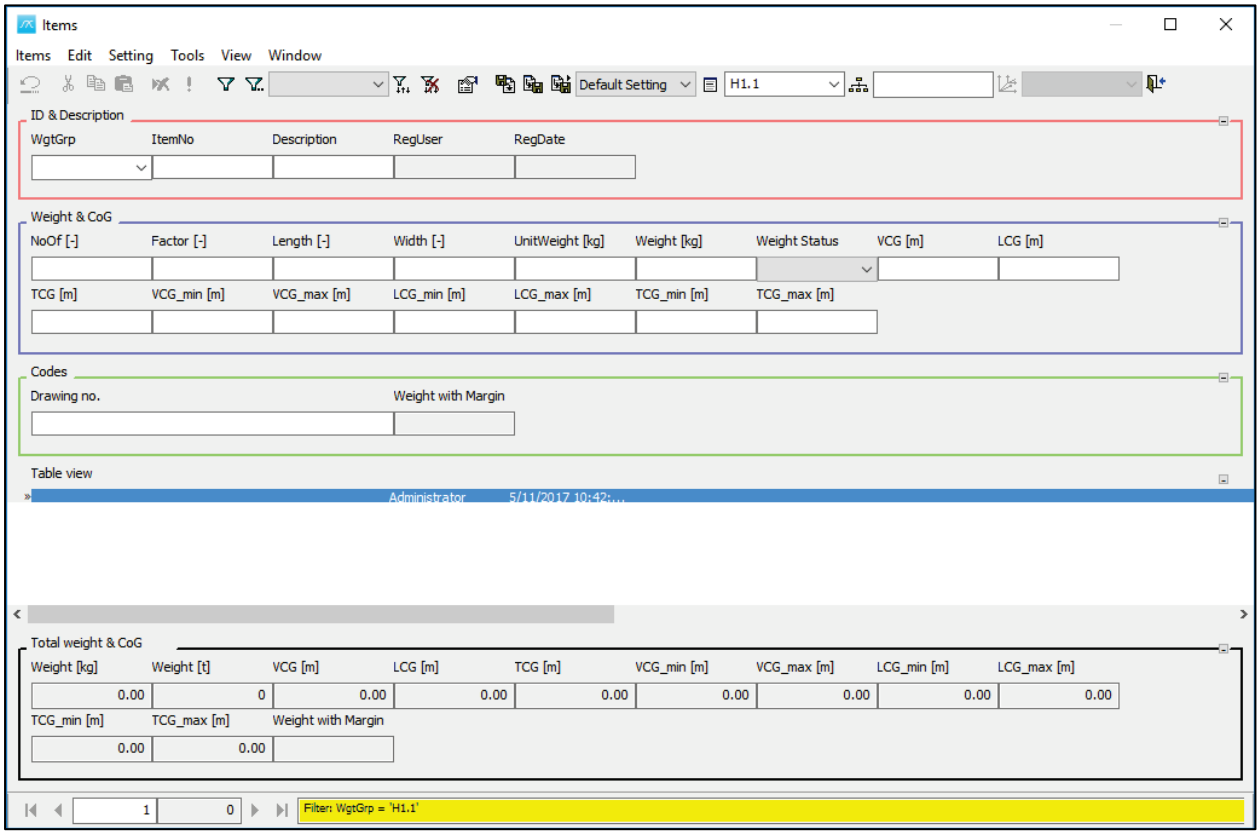
To close the Items window press the Close window icon .In the lower part of the item window, in the highlighted area in yellow color, by pressing the arrow button, this will clear the fields of the single record view.

This procedure is only necessary if there already are weight items defined in the weight group.



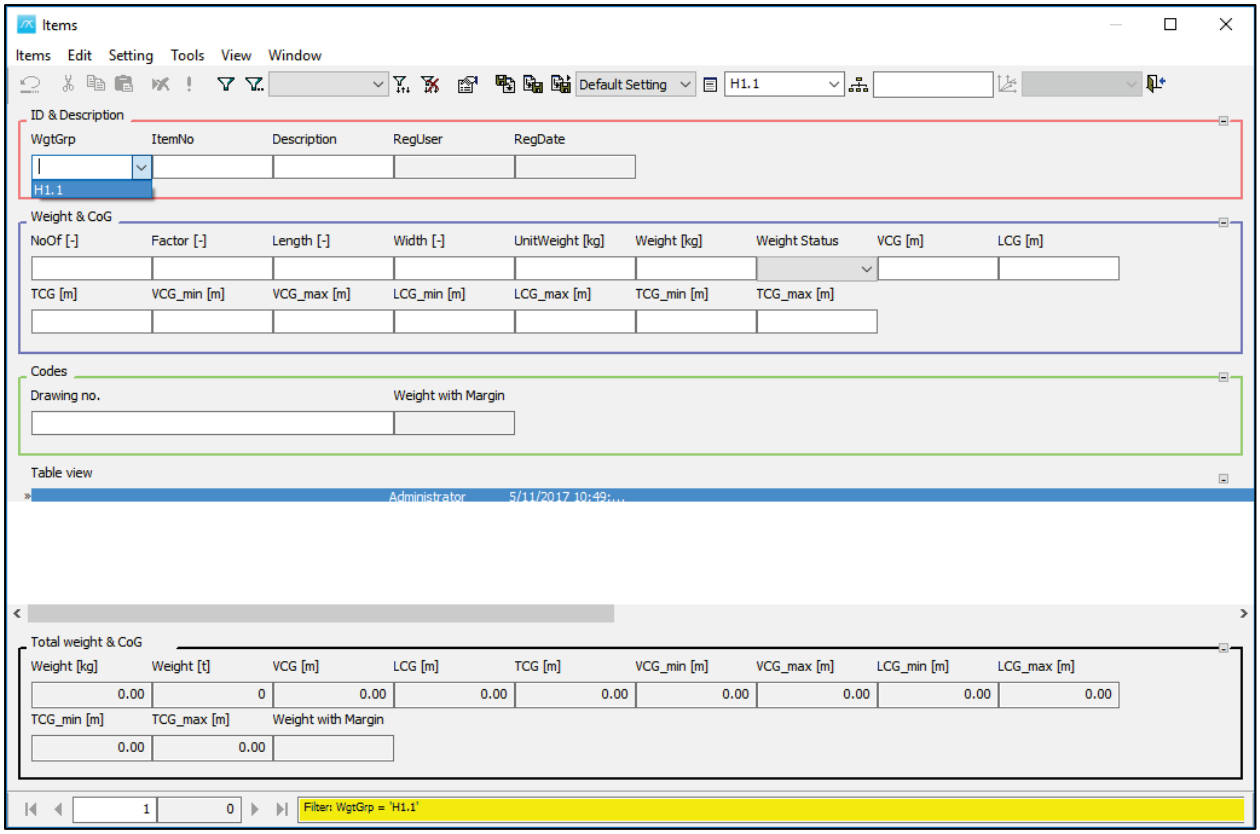
Step 2: Add a Weight Item in the Item Window via the “Single View”

In the ShipWeight main window window, navigate to weight group H1.1 Aftbody and open the Item window.



Add weight item ‘Section 1’ using the ‘Single Record’ area

To register a new item weight using the Single Record area of the Item window, you must start by selecting Weight Group H1.1 from the WgtGrp dropdown list.



Jump to the ItemNo field by pressing the TAB button. Enter Item number 1. When pressing TAB once more, the item will be created. Continue filling in data for the weight item.

Data for **Section 1, H1.1 Aftbody**:

Field	**Value**
WgtGrp:	H1.1
ItemNo:	1
Description:	Section 1
NoOff:	1.000
Factor:	1.000
Length:	1.000
Width:	1.000
UnitWeight:	66000.00

Field	**Value**
Weight Status:	C

VCG: 4.300

LCG: -1.250

TCG: 0.000

VCG_min: 1.500

VCG_max: 6.000

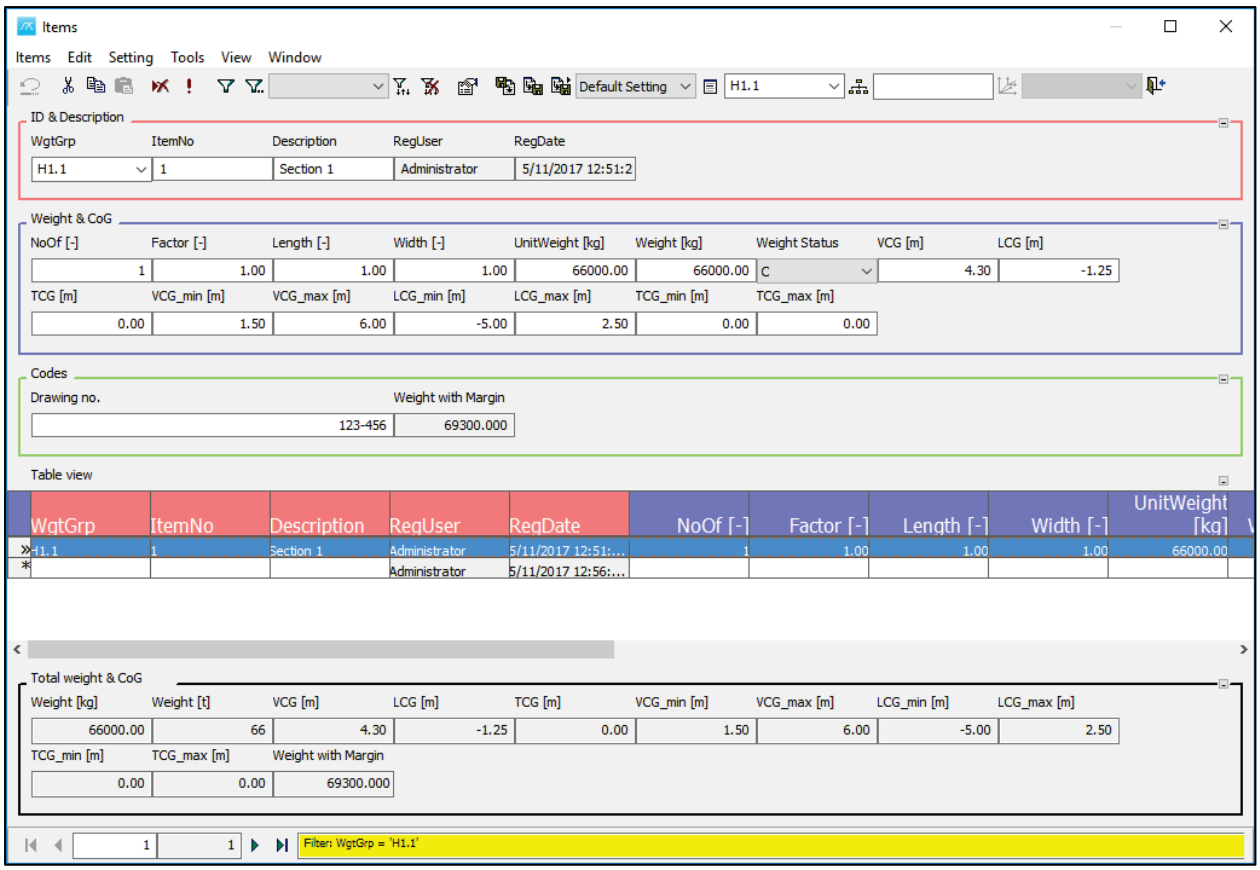
LCG_min: -5.000

LCG_max: 2.500

TCG_min: 0 (hidden field)

TCG_max: 0 (hidden field)

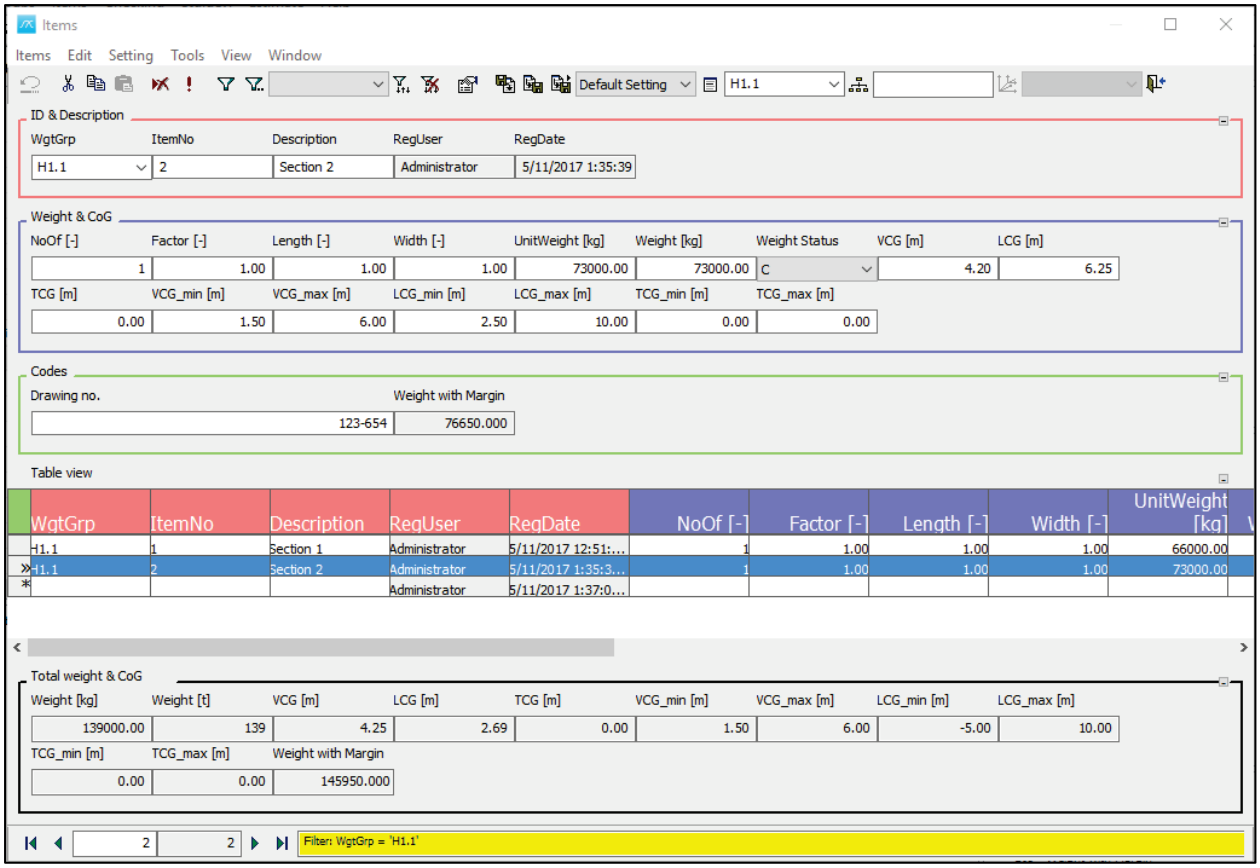
Drawing no. 123-456



To complete the registration of the weight item, press the right-arrow on the toolbar, or click the empty row in the table.

Step 2: Add a Weight Item in the Item Window via the "Table View"

Select the empty row in the table and double click the WgtGrp cell. WgtGrp will now be set to H1.1. Click the TAB-key to jump to the next column. Continue entering item data for 'Section 2'.



Data for **Section 2, H1.1 Aftbody**:

Field	**Value**
WgtGrp:	H1.1
ItemNo:	2
Description:	Section 2
NoOff:	1
Factor:	1
Length:	1
Width:	1
UnitWeight:	73000
VCG:	4.2
LCG:	6.25
TCG:	0.000

VCG_min: 1.5

VCG_max: 6.000

LCG_min: 2.500

LCG_max: 10

Drawing no. 123-654

Weight Status: C

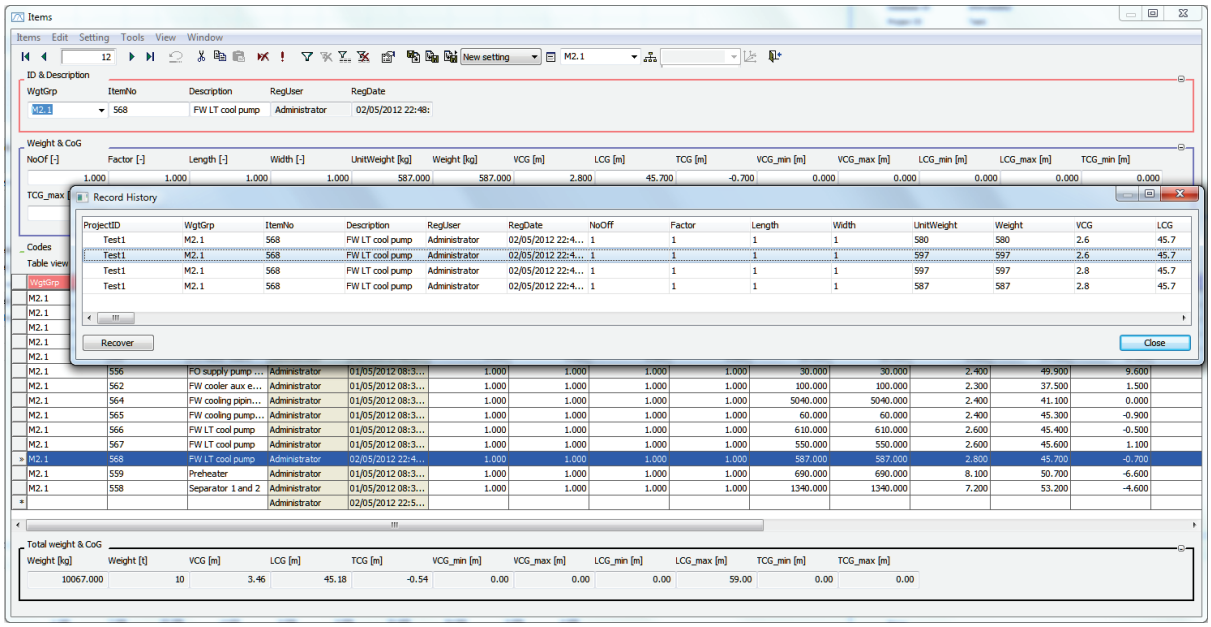
Step 3: Make a Change to a Weight Item

Make a change to an item by editing one or more values in fit the item.

Step 4: Check Item History

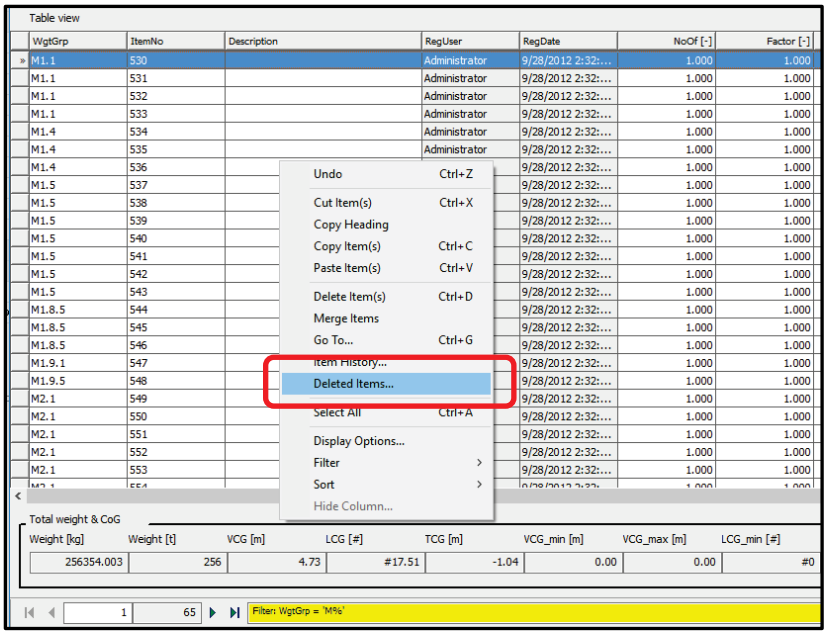
By right-clicking and selecting “Item history”, the user can see all the changes that have happened to the selected item.

Now, it is possible to recover a previous version of the item by selecting a previous version of the item and click the “Recover button”.

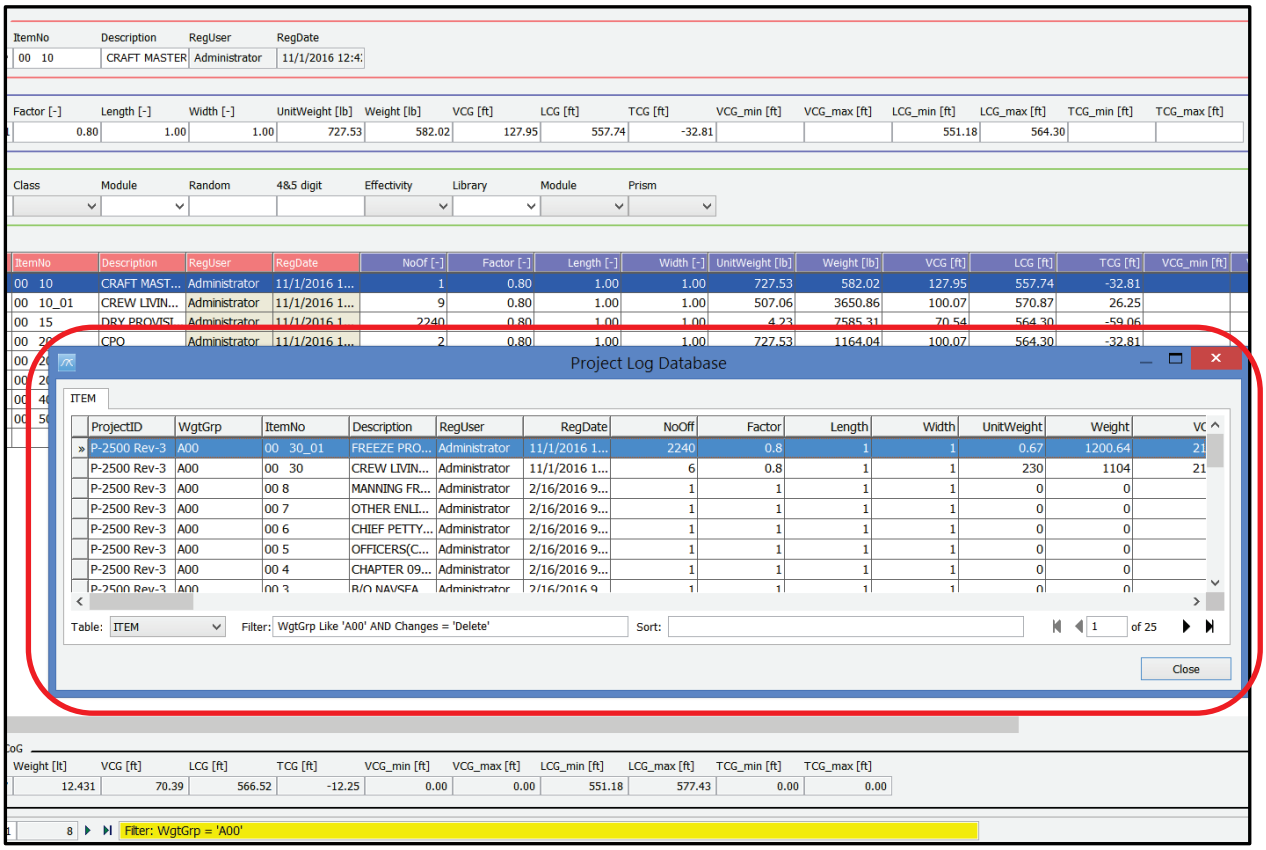


Step 5: Deleted Item History

Now delete the item you changed. Right click in Items window, select “Deleted Items…” to recover the deleted item.



The Project Log Database window will open:



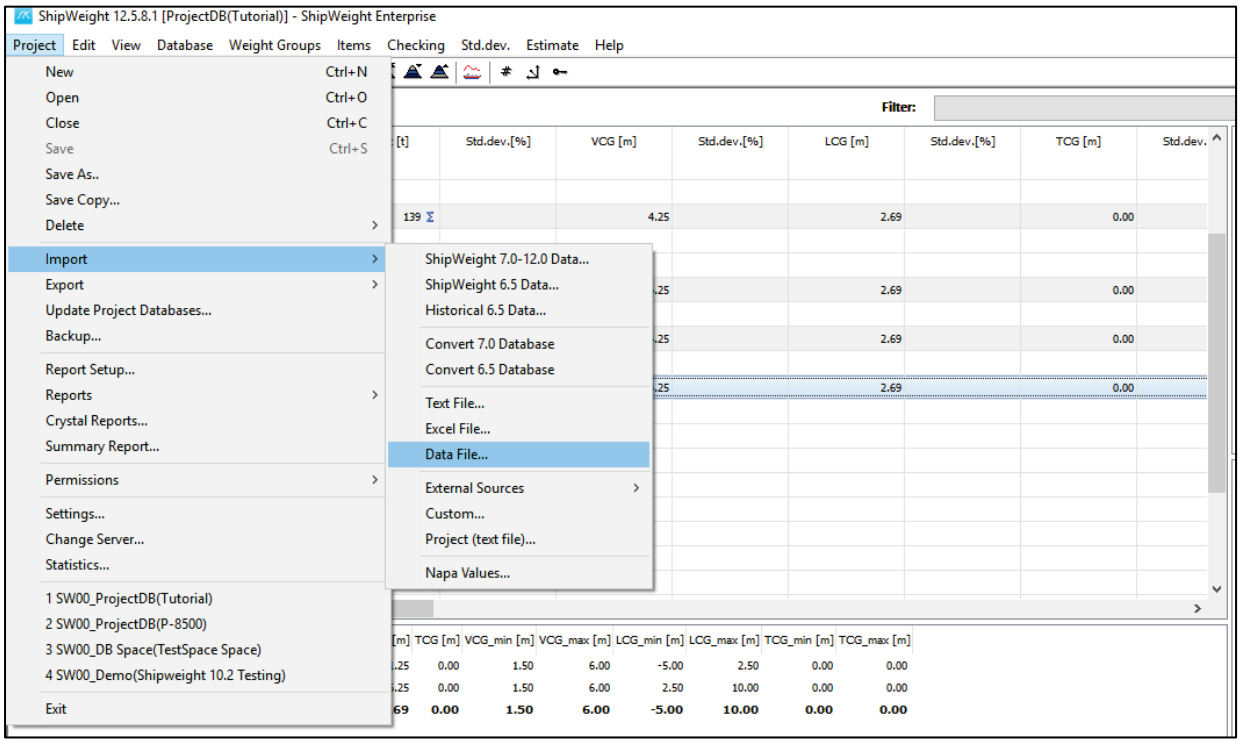
Import of Weight Data

This session will give an introduction to the import of weight data from Excel.

Step 1: Open the "Data File Import" Window

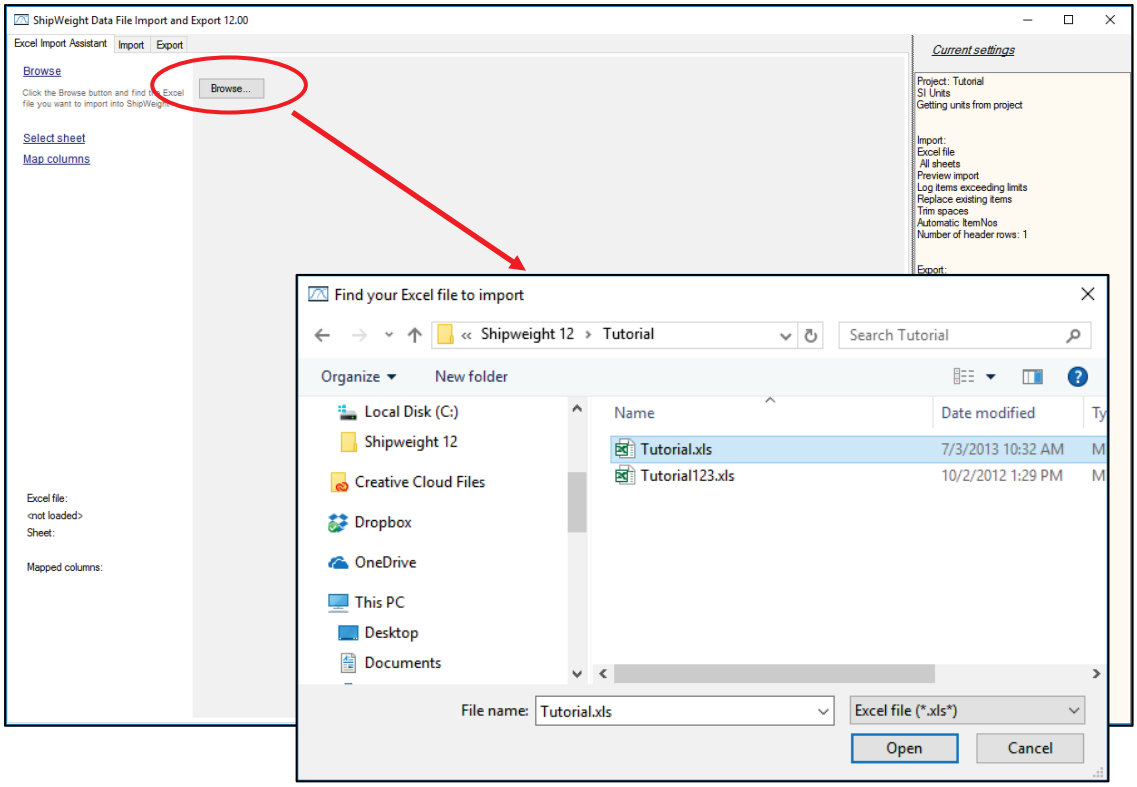
IWe will import weight data from an Excel workbook. This can be done using the 'ShipWeight Data File Import' window.

Open the Data File Import window from menu: Project -> Import -> Data file…



Step 2: Browse and Select a Spreadsheet File

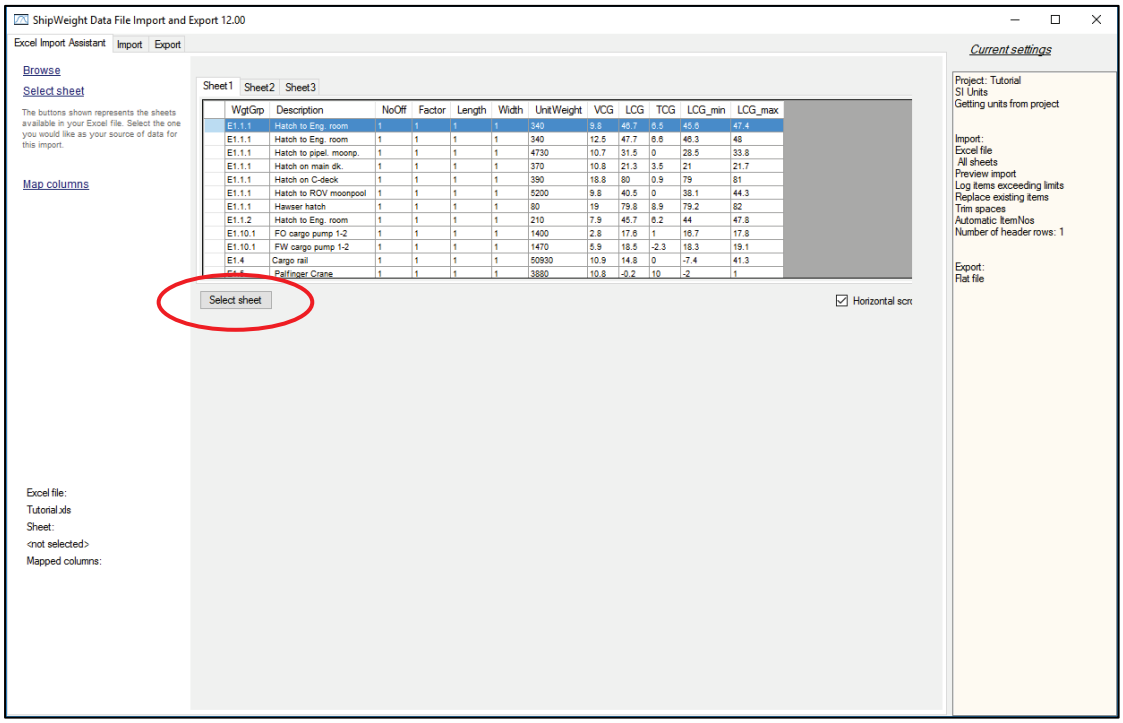
First we browse and select the spreadsheet file. On the 'Assistant' tab-sheet, we press the Browse button. Using the 'Open window window, we locate the Excel file to import. Press the Open button to select the file "Tutorial.xls".



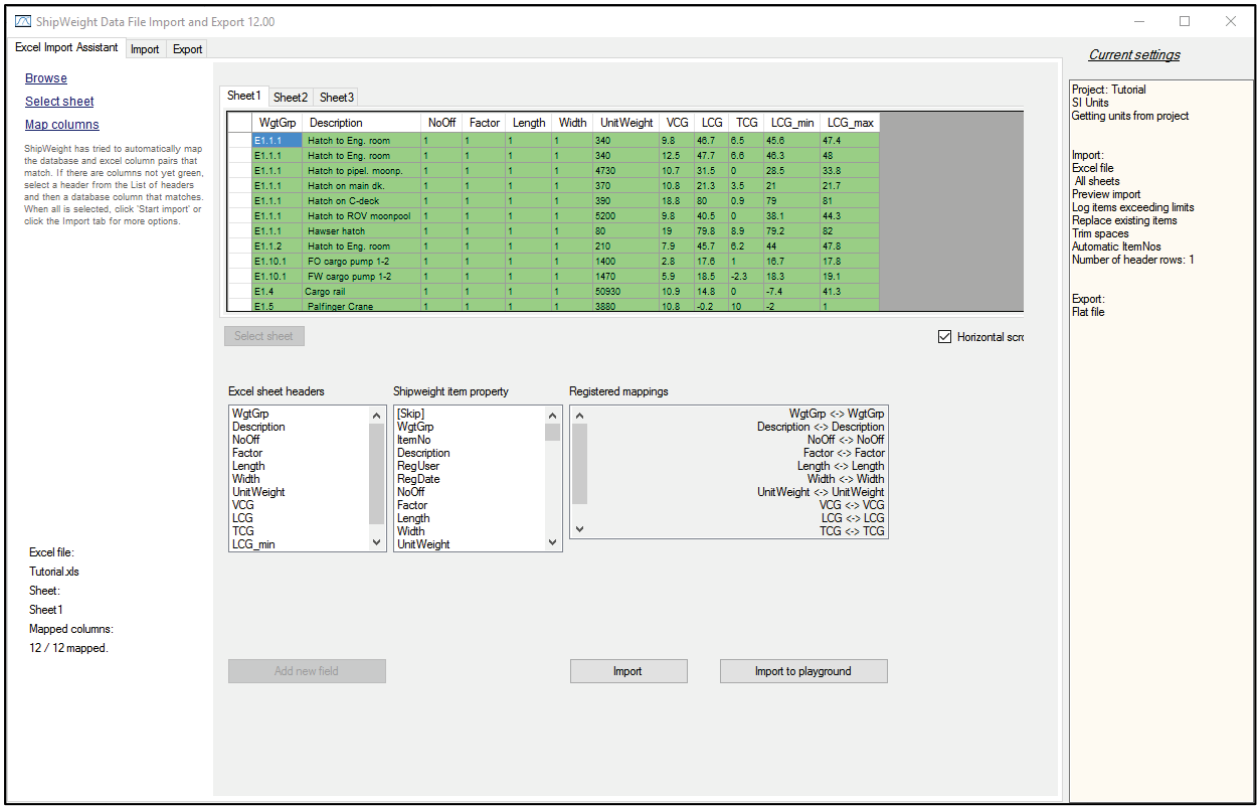
The Data File Import Window supports the import of XLSX files in addition to XLS files. Once the Excel File has been selected, a preview of the sheet included in the file will be shown.

Step 3: Select the sheet in the Import

Then, the next step is to select the sheet to import.



When the sheet is selected, the import window will try to guess the mapping between the columns in the spreadsheet and ShipWeight fields, based on the column headings in the spreadsheet.

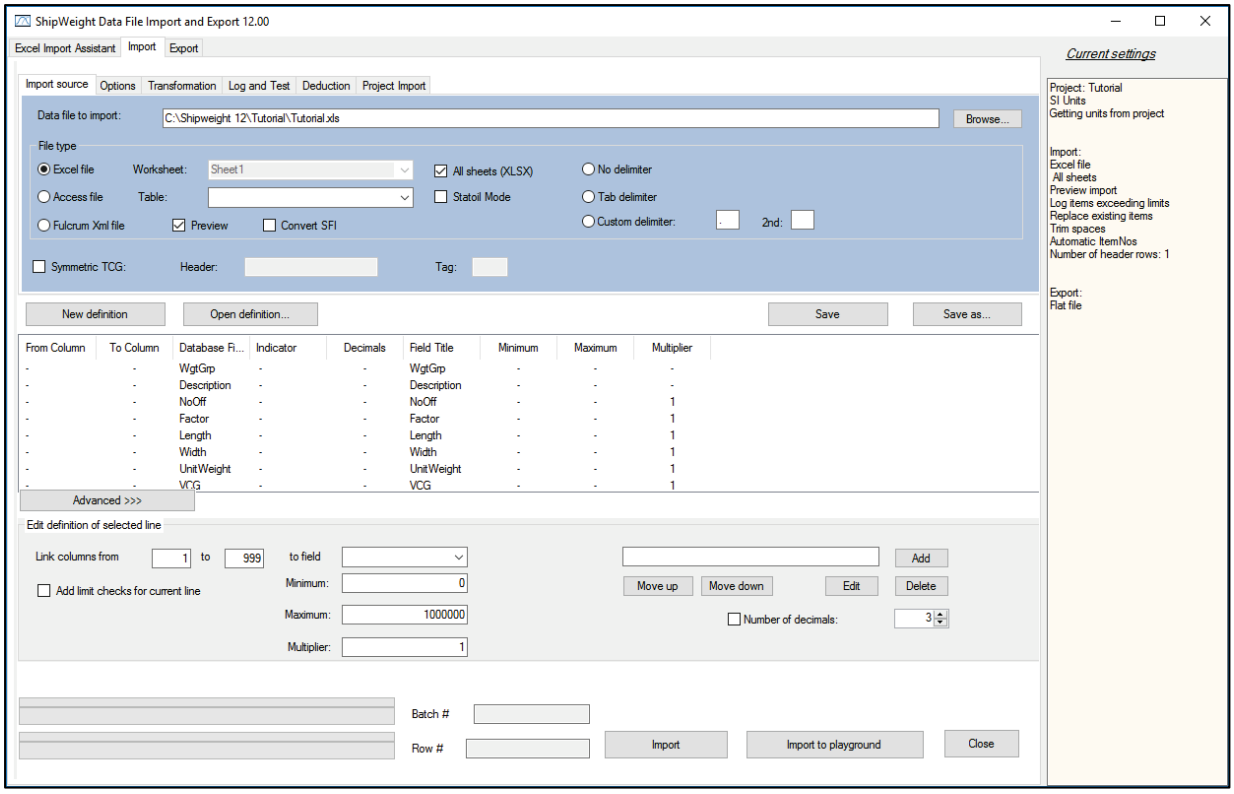


Columns where mapping have been found automatically will get a green colour and the mapping will be shown in the list below. If this mapping is wrong, you can deselect the column either in the sheet preview or in this list of linked columns.

Step 4: Manually Add Any Missing Import Mapping

To manually add columns not automatically mapped, click on the column either in the preview sheet or in the column list and select the corresponding ShipWeight field from the ShipWeight list.

An import can be run directly from the 'Import' tabsheet (either to main database or to Playground area), or the mappings and settings can be transferred to the normal data file import for more advanced settings and checking.



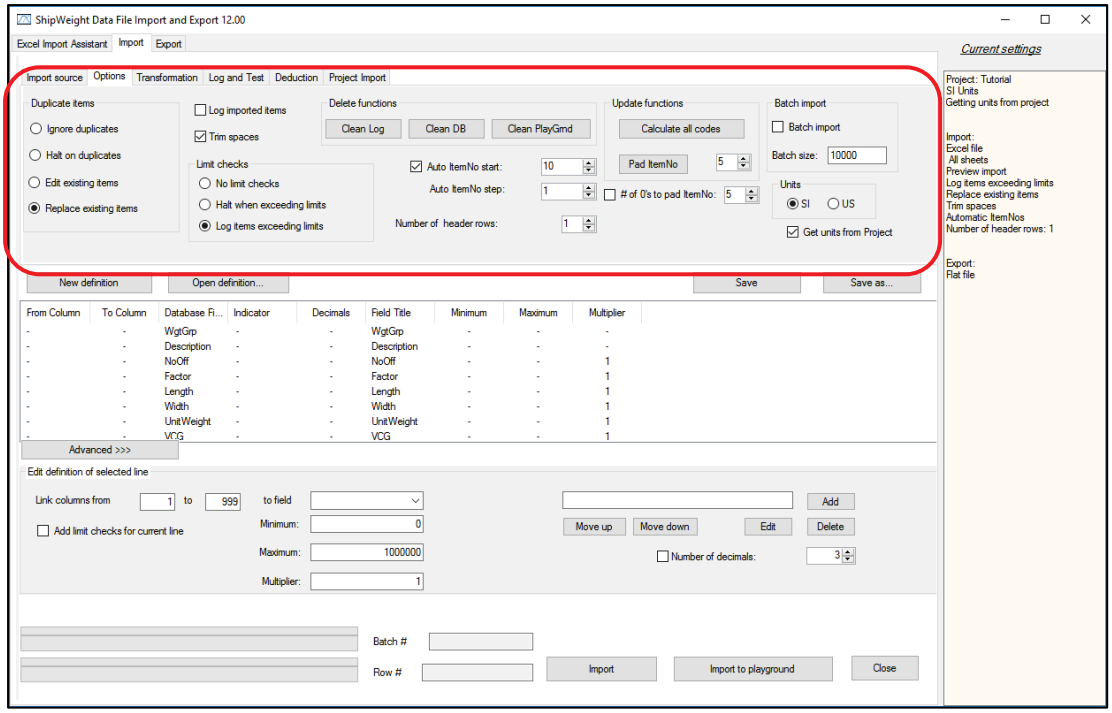
This import definition list may be saved (click “Save” button in the window) and restored by clicking from the “Open” button later.

Step 5: Check and Set Import Options

Before we start importing data, we must set the import options. Click the ‘Options’ tab sheet. First we will keep the option ‘Auto ItemNo start’. The reason for this is that our spreadsheet doesn’t contain a column for item numbers.

Please note that the import will fail if you try to import data with item numbers already in use in the database. If this is the case, please try to increase the number in the ‘Auto ItemNo start’ field.

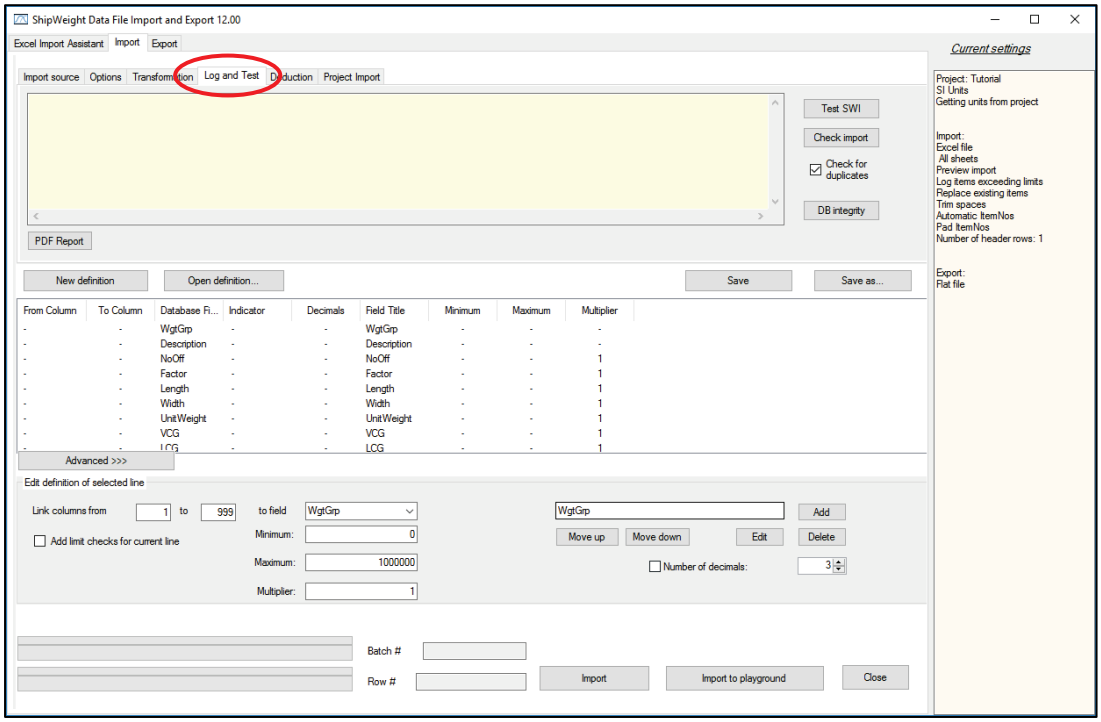
The ‘Pad ItemNo’ button will change the format of the item number of existing items. First set the number of characters the item number should include. Pressing the ‘‘Pad ItemNo’ button will add the digit 0 in front of the item number, so that the item number includes the proper number of characters. Please note that the option ‘Number of header rows’ is disabled. The ‘ShipWeight Data File Import’ always assumes that the spreadsheet contains one header row.



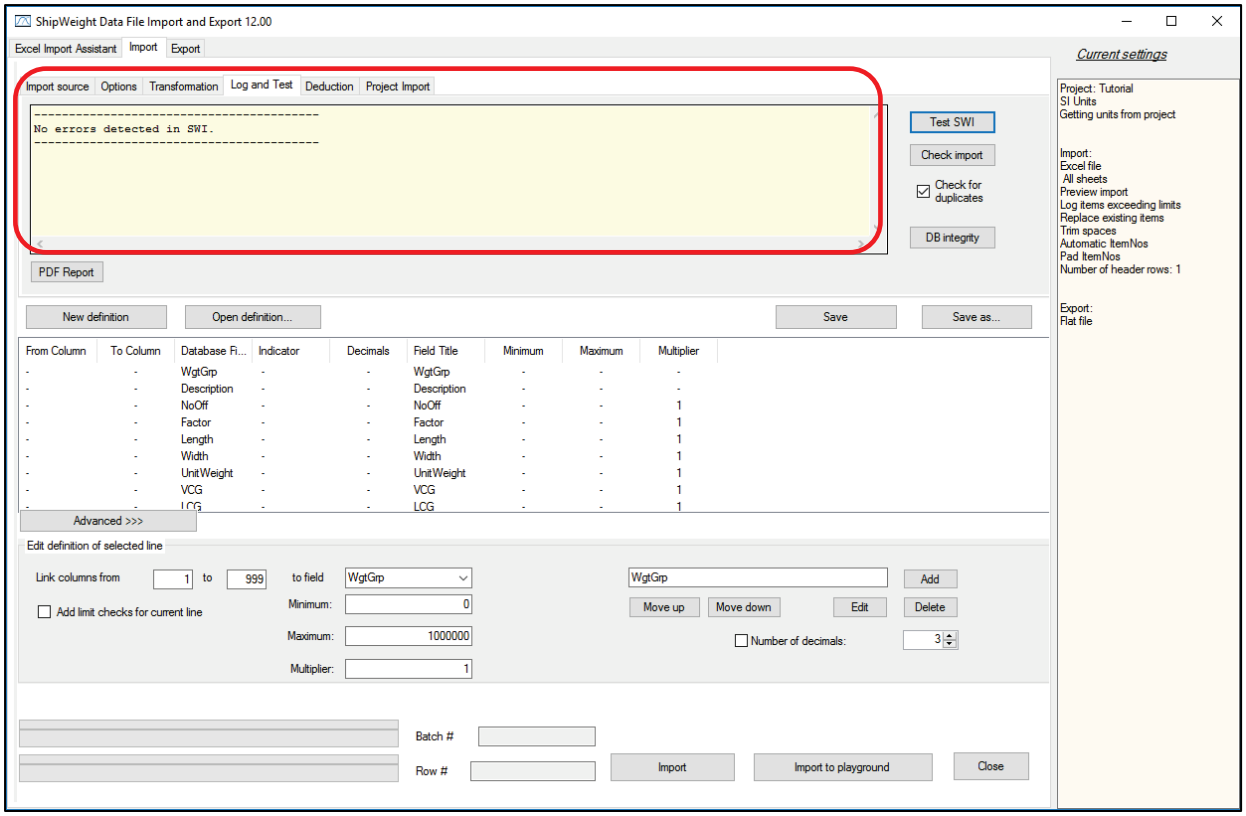
Now when the settings are ready we can choose either to Import or Test it.

Step 5. Test the Import Prior to Importing It

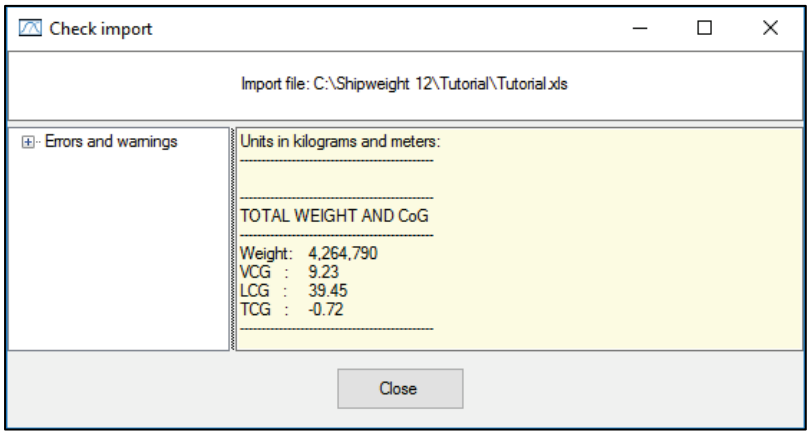
To test the import, first we go to the 'Log and Test' tab sheet:



Select 'Test SWI' button to see if there are any errors detected in the import definition file. As we can see, right now there is no errors:

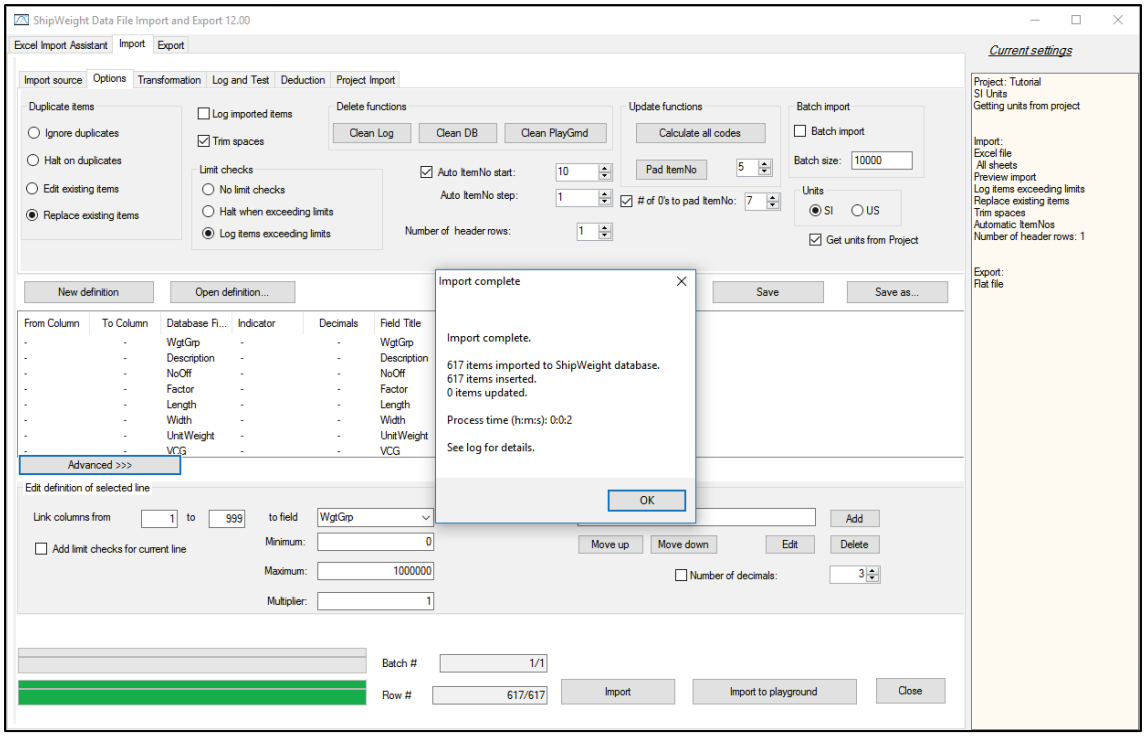


Then, we can also select the 'Check import' button, to perform the import without actually importing it. Now it runs throught the import and it will show you a small report, that the import is completed:

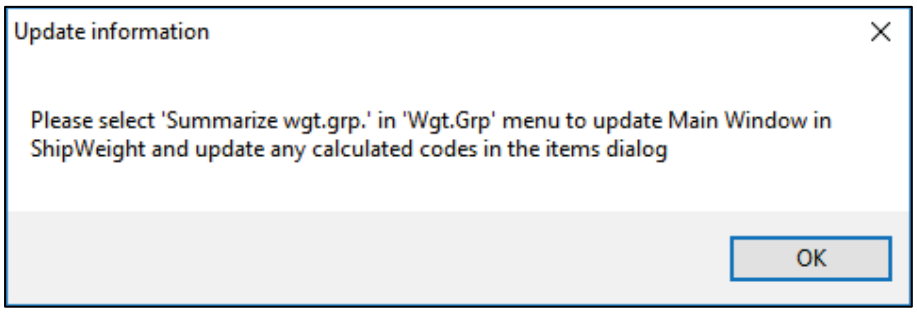


Step 6: Carry Out the Import

Now we are ready to start importing data. Make sure that the spreadsheet you are going to import is not open in Excel.



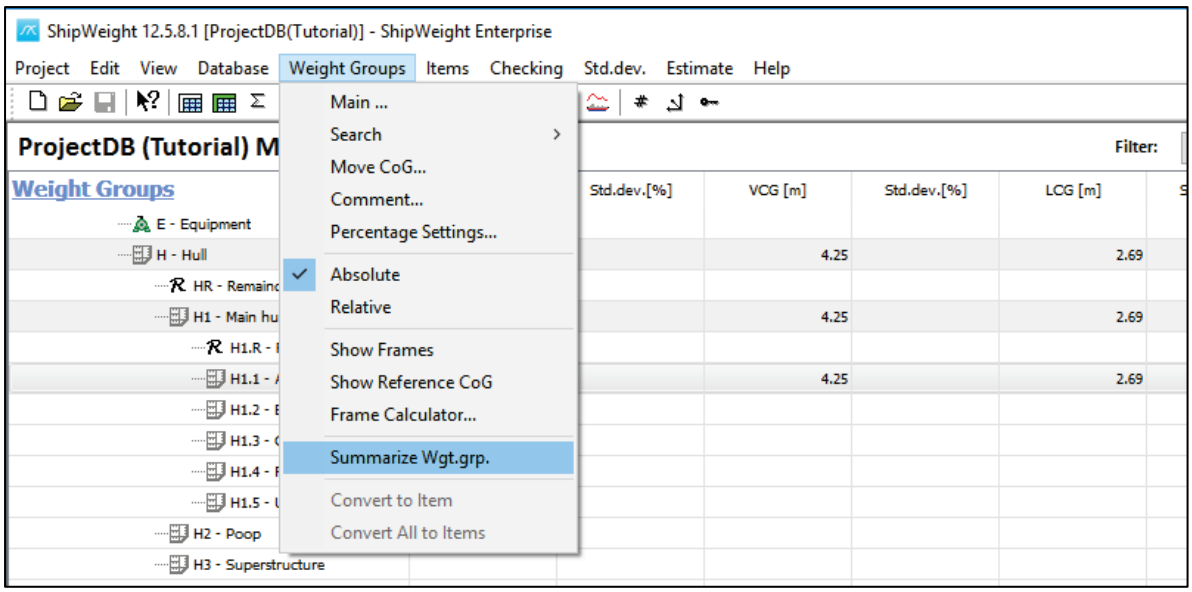
In the Import complete window press **OK** button. Then press **Close** button in the Import window. The Update Information window will appear, asking you to 'Summarize wgt.grp.' in the 'Wgt.Grp' menu.



Click **OK**.

Step 7: Update the Main Window

Now, in the main window window of ShipWeight, go to **Weight Groups** menu and select 'Summarize Wgt.grp':


ShipWeight 12.5.8.1 [ProjectDB(Tutorial)] - ShipWeight Enterprise
Project
Edit
View
Database
Weight Groups
Items
Checking
Std.dev.
Estimate
Help
Main ...
Search
Move CoG...
Comment...
Percentage Settings...
Absolute
Relative
Show Frames
Show Reference CoG
Frame Calculator...
Summarize Wgt.grp.
Convert to Item
Convert All to Items
ProjectDB (Tutorial) M
Filter:
Weight Groups
Std.dev.[%]
VCG [m]
Std.dev.[%]
LCG [m]
E - Equipment
H - Hull
4.25
2.69
HR - Remainc
H1 - Main hu
4.25
2.69
H1.R -
H1.1 -
4.25
2.69
H1.2 -
H1.3 -
H1.4 -
H1.5 -
H2 - Poop
H3 - Superstructure

Filtering, Sorting and Changing Data in ShipWeight

This section will look into how to

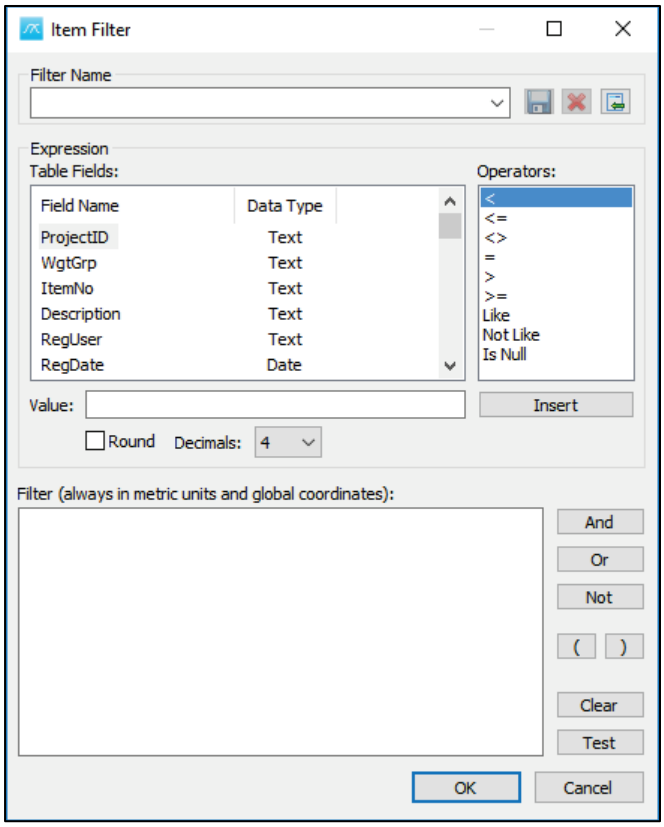
- Filter data in ShipWeight
- Sort data in ShipWeight
- Change weight data and perform calculation on weight data for multiple rows

Step 1: Open the Item Window

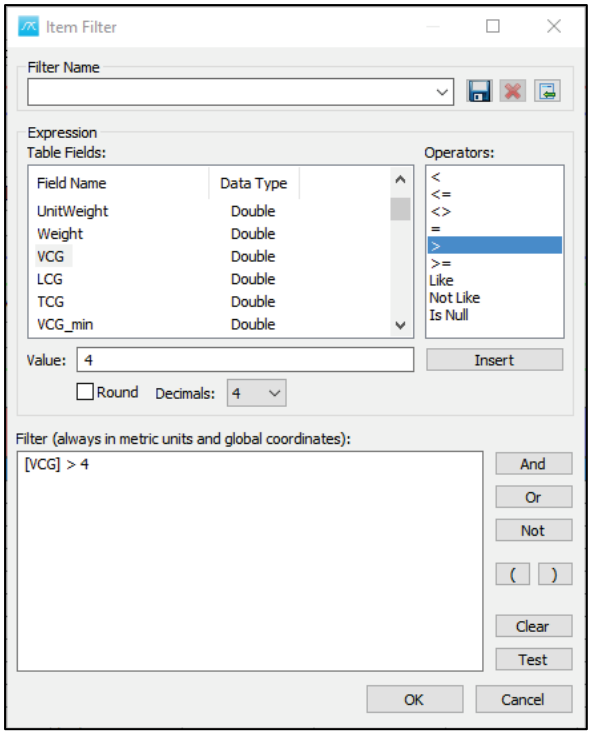
In the tree-view on the main window, navigate to weight group E2.2 under LW – Lightship -> E – Equipment -> E2 – Ship equipment, and open the item window.

Step 2: Open the Filter Window, Set and Save a Filter

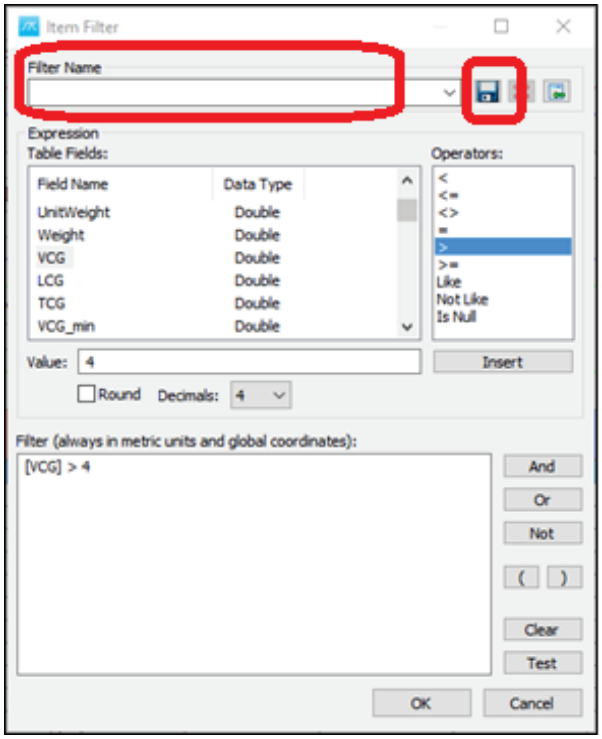
Press the 'Apply filter' button on the toolbar, or select Tools -> Filter -> Apply… on the Tools menu. The Item Filter window will pop up.



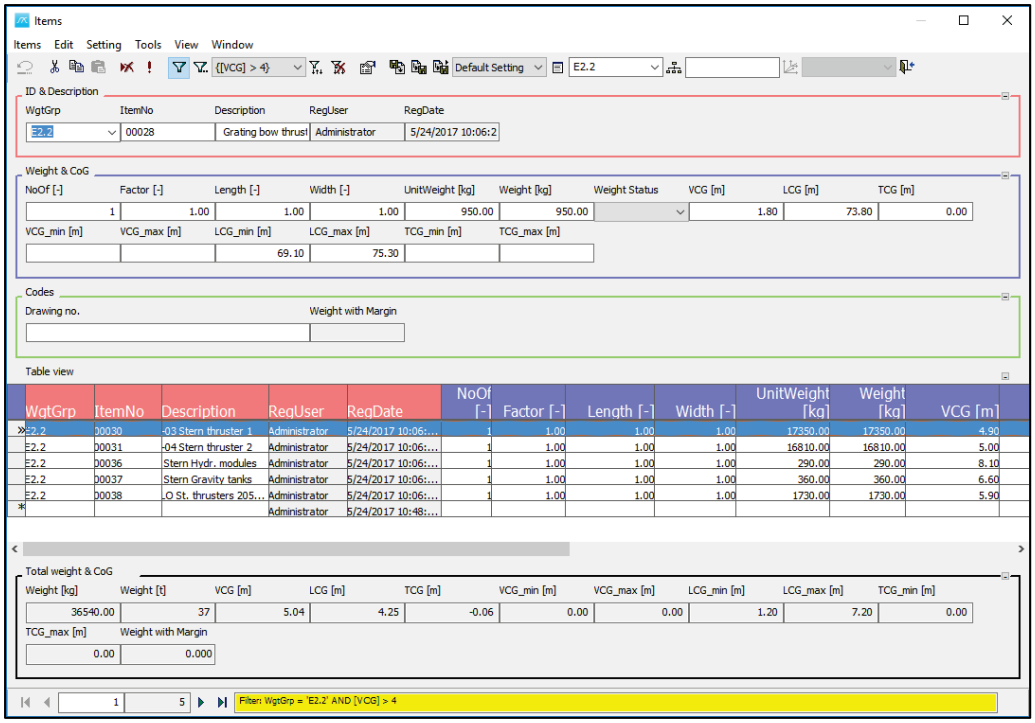
In the 'Table Fields' list, select VCG. Select the '>' operator from the 'Operators' list. Set the 'Value' to 4, and press the Insert button.



Note that you can save the filter by giving it a name in the “Filter name” droplist and then click the “Save” button. All saved filters can be retrieved from the drolist in the Filter window and directly from the filter droplist of the Item window.



Press OK to apply the filter. All items which have VCG’s larger than 4.0 meters will be listed.



To remove the filter, select Tools -> Filter -> Clear, or press the ‘Clear Filter’ button.

More on Filter and “Wild cards”

A “Wild card” can be used in a filter string the following way:

Use % to represent any character and any number of character.

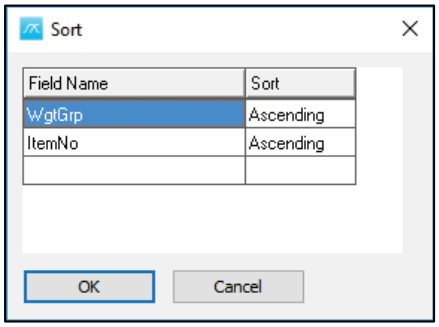
Use _ to represent any character.

Use [ ] to specify “either” of values presented in the square brackets.

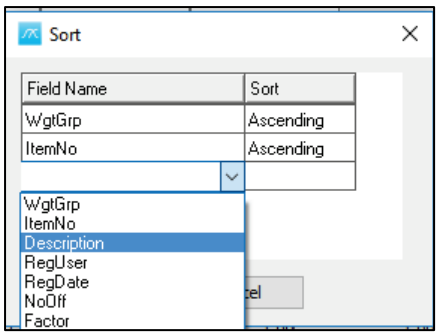
Use ^ to indicate NOT then followed by [ ] with the NOT characters inside the brackets.

Step 4: Open the Sort Window

To open the Sort window, select Sort -> Apply… on the Tools menu, or press the ‘Sort’ button on the toolbar.



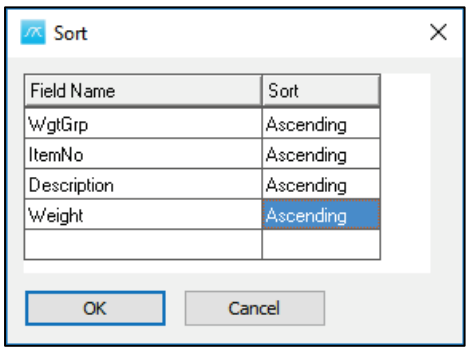
Click the ‘Field Name’ cell of the empty row. The cell will change to a combo box. Activate the dropdown list, and select Description.



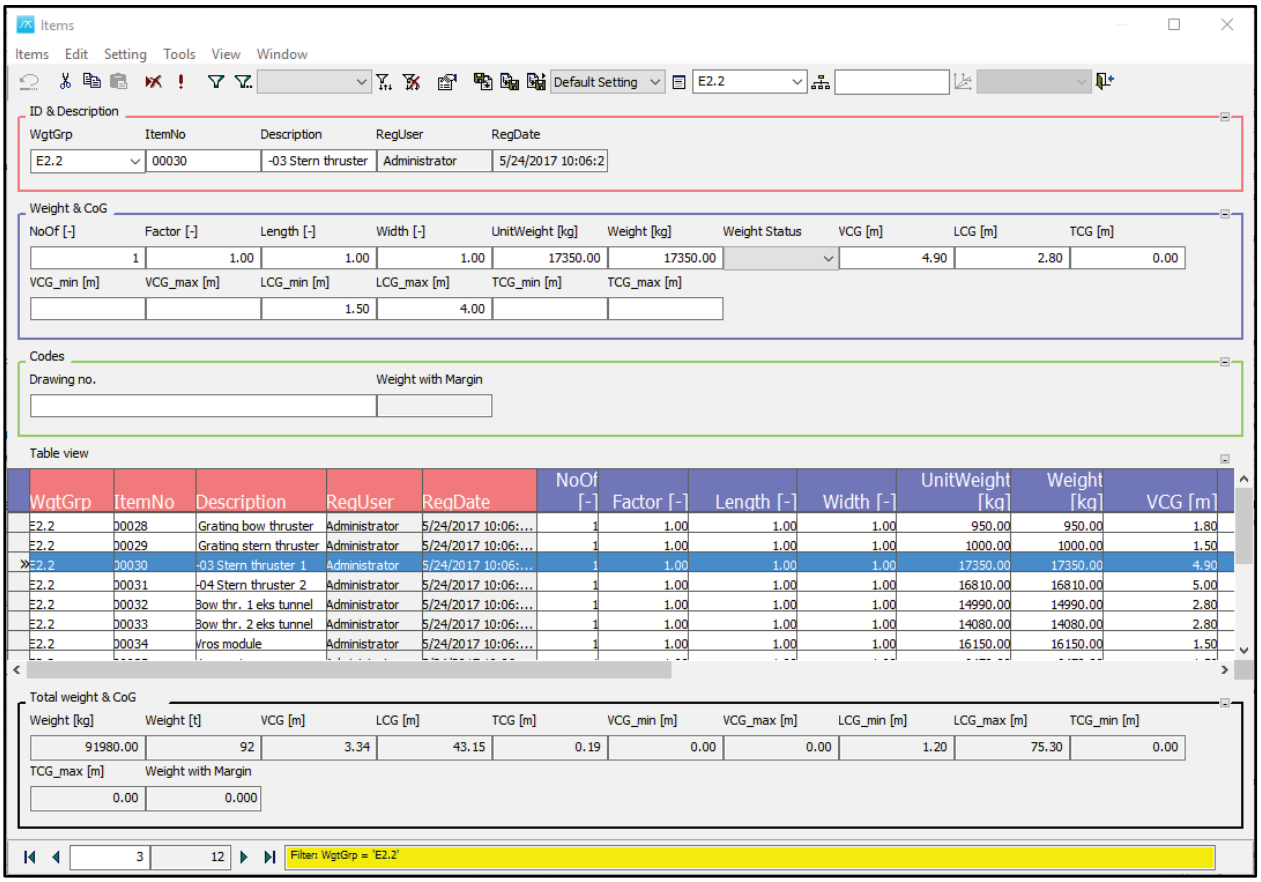
Click the ‘Sort’ cell. By default, the value will be set to ‘Ascending’.

On the next row, select Field Name: Weight.

Data Type: Ascending

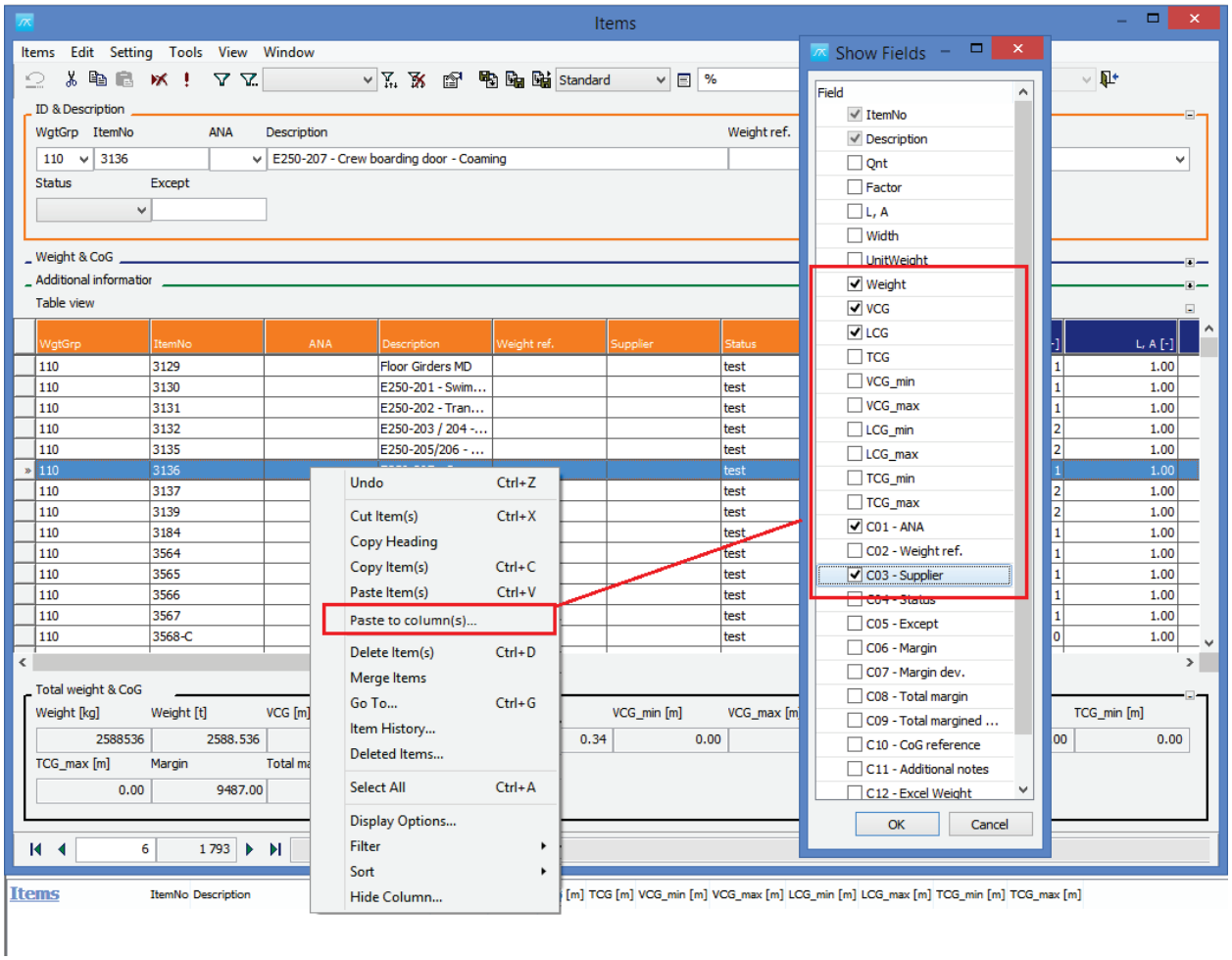


Press the OK button to apply the Sort.



Step 5: Paste Values to Certain Columns

This function will allow to specify which columns to paste to from the clipboard. Pasting will happen to existing items and from the selected row and below (depending on how many rows are in the clipboard). Picture below shows how to do this in the table:

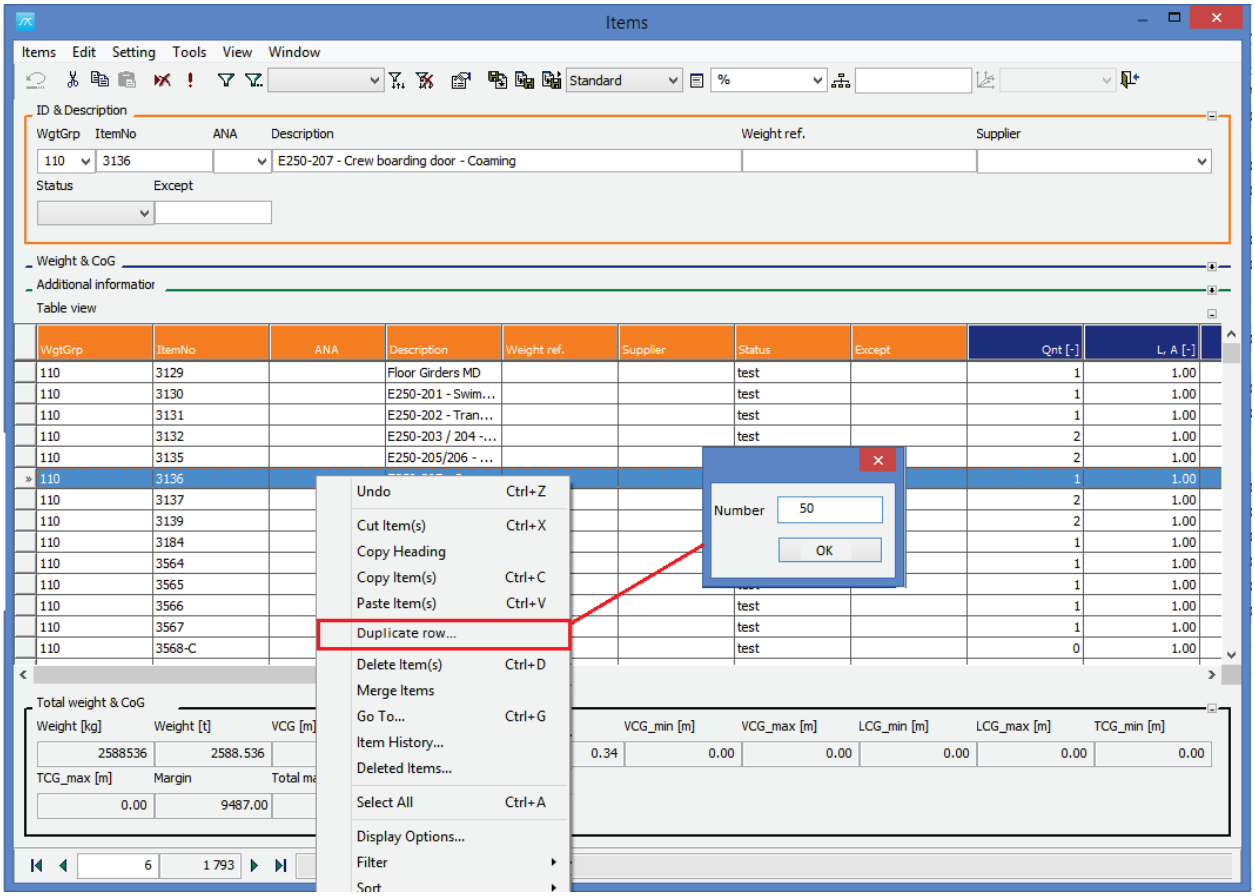


Step 6. Duplicate Rows

A function for easy duplication of a row into any number of copies.

ItemNo can follow the copied one, adding on a suffix to the item 3136_1, 3136_2, 3136_3,…

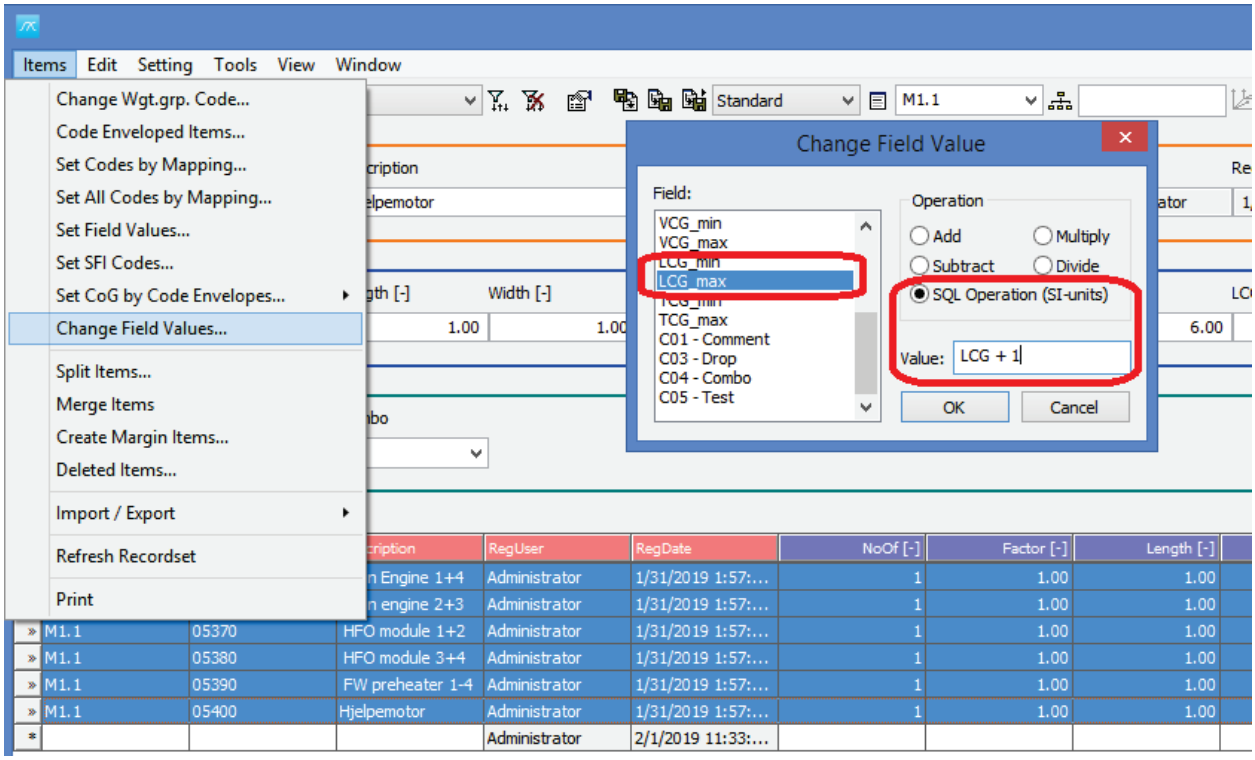
GUI shown here:



Step 7: Change Some Data Values by Calculation

The “Execute operation” window that can be opened from the Item Window has changed name to “Change Field Values…” and has a new option allowing for much greater flexibility than the Add/Subtract/Multiply/Divide options in version 12.

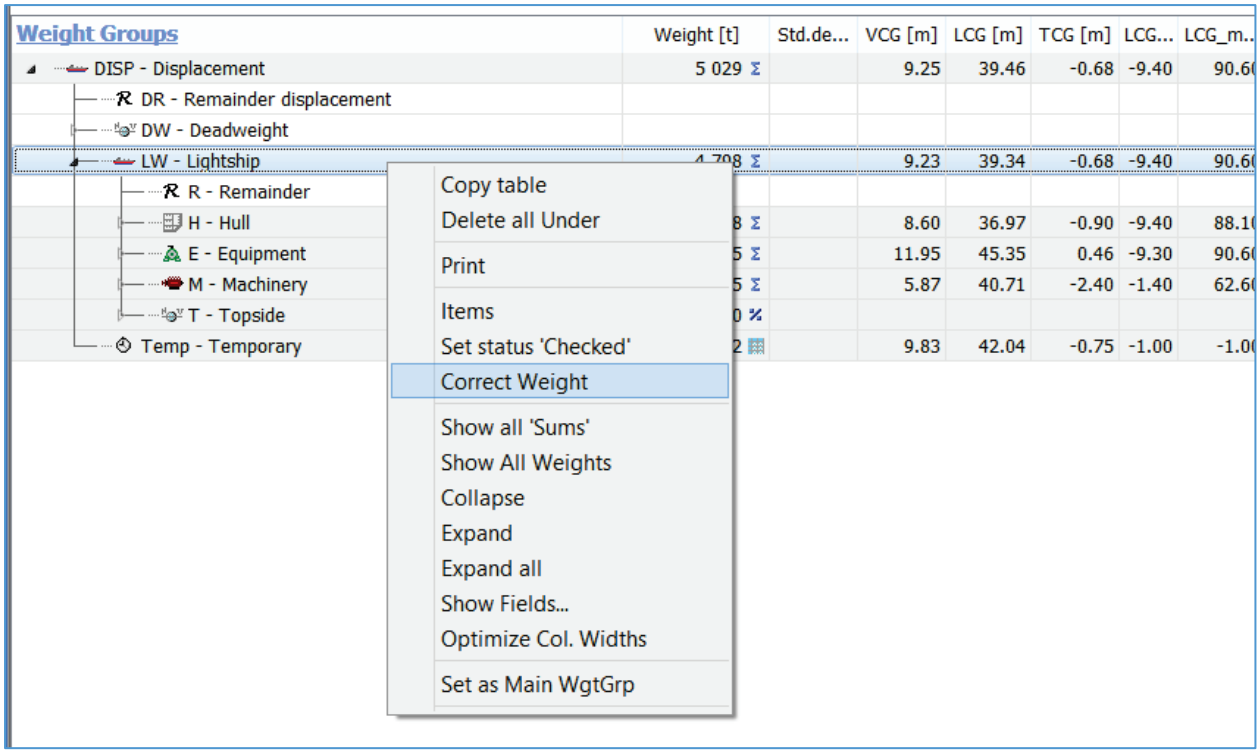
The new option “SQL Operation”, allows the user set a calculation formula to update a field. The calculation formula may refer to other fields. The simple example below shows setting LCG_max values for the selected items to the LCG value plus 1 meter (LCG +1). Note that these expressions should always be set in SI/metric units, even if project is in imperial units.



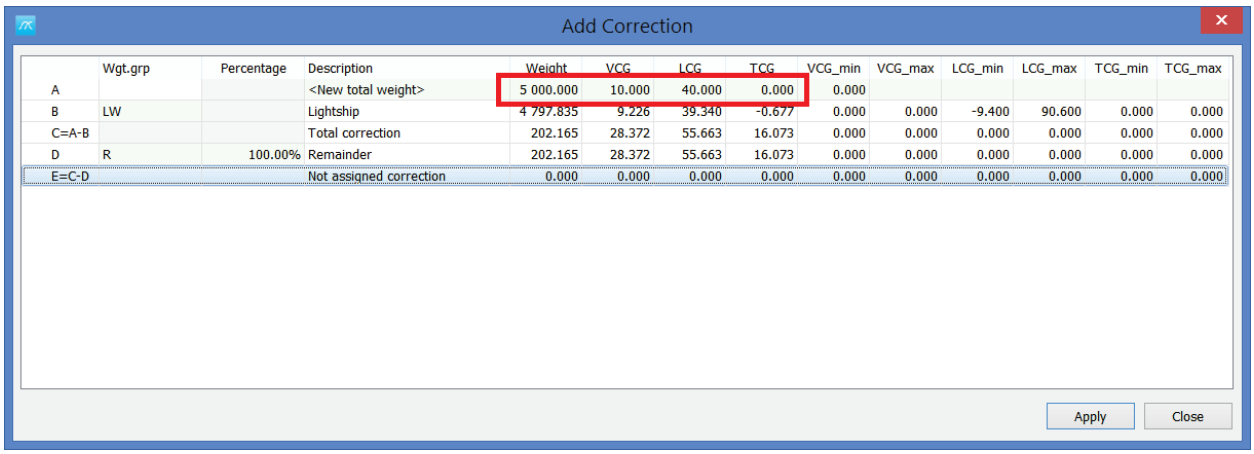
Step 8: Adding a Correction Weight to Adjust a Summary

Sometimes you want to adjust a summary to make it a specific set of values. As an example, you want to adjust the Lightship weight and center of gravity to match the results from a displacement and inclining test.

ShipWeight has a function to let you automatically accomplish this. First, right-click the weight group you want to adjust, and select “Correct Weight” in the submenu that appears.

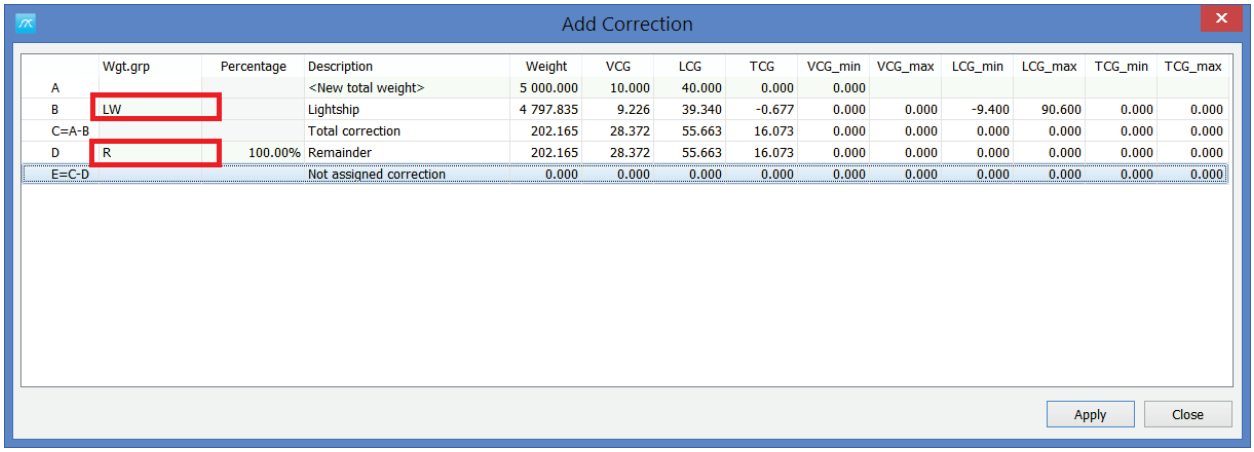


In the “Add Correction” window that pops up, in row A; fill in the values (weight and CG) you want the summary to have after correction.



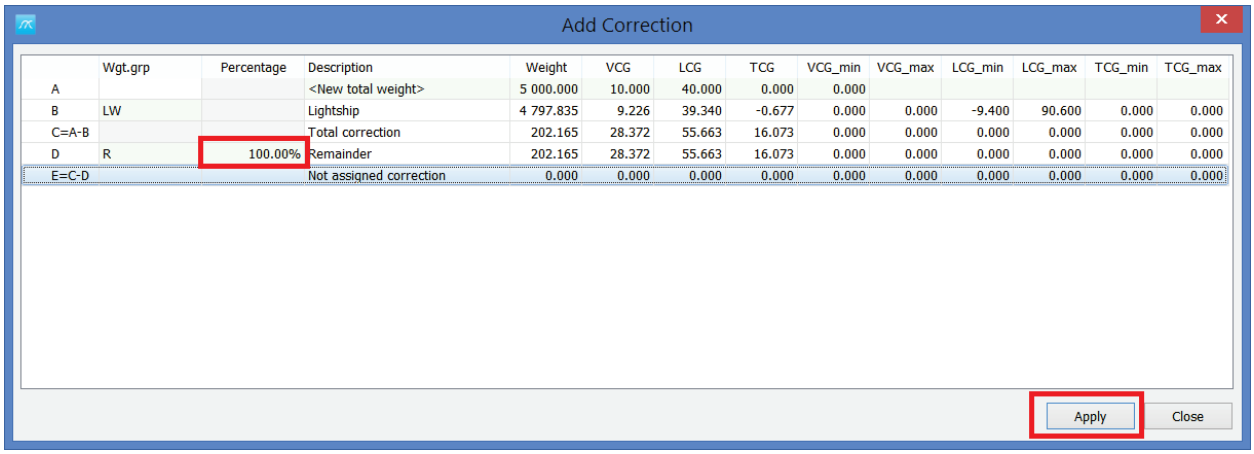
In row B, make sure it displays the correct summary that you want to change. If not correct, click the cell to change the to the correct weight group from the droplist.

In row D, ShipWeight is suggesting to add the correction to the remainder group. If you want the correction to be added to a different weight group, change this here by clicking the cell and select the desired weight group from the droplist.



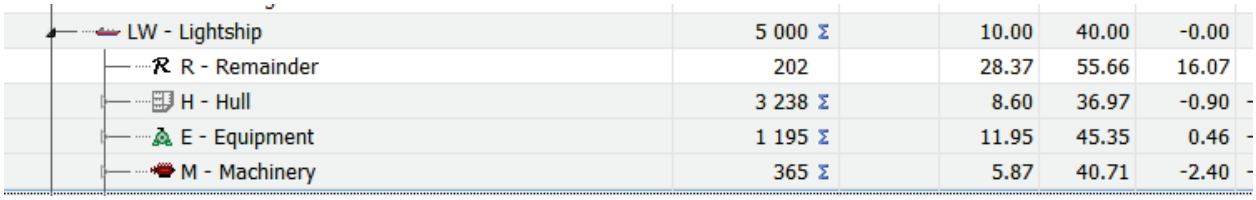
	Wgt.grp	Percentage	Description	Weight	VCG	LCG	TCG	VCG_min	VCG_max	LCG_min	LCG_max	TCG_min	TCG_max
A			<New total weight>	5 000.000	10.000	40.000	0.000	0.000					
B	LW		Lightship	4 797.835	9.226	39.340	-0.677	0.000	0.000	-9.400	90.600	0.000	0.000
C=A-B			Total correction	202.165	28.372	55.663	16.073	0.000	0.000	0.000	0.000	0.000	0.000
D	R	100.00%	Remainder	202.165	28.372	55.663	16.073	0.000	0.000	0.000	0.000	0.000	0.000
E=C-D			Not assigned correction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Next, still in row D, set if all or only parts of the correction should be applied to the selected group in row D. The default is 100 % - that the full correction will be applied to the group. Click “Apply” button to transfer the calculated values to the main window.



	Wgt.grp	Percentage	Description	Weight	VCG	LCG	TCG	VCG_min	VCG_max	LCG_min	LCG_max	TCG_min	TCG_max
A			<New total weight>	5 000.000	10.000	40.000	0.000	0.000					
B	LW		Lightship	4 797.835	9.226	39.340	-0.677	0.000	0.000	-9.400	90.600	0.000	0.000
C=A-B			Total correction	202.165	28.372	55.663	16.073	0.000	0.000	0.000	0.000	0.000	0.000
D	R	100.00%	Remainder	202.165	28.372	55.663	16.073	0.000	0.000	0.000	0.000	0.000	0.000
E=C-D			Not assigned correction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

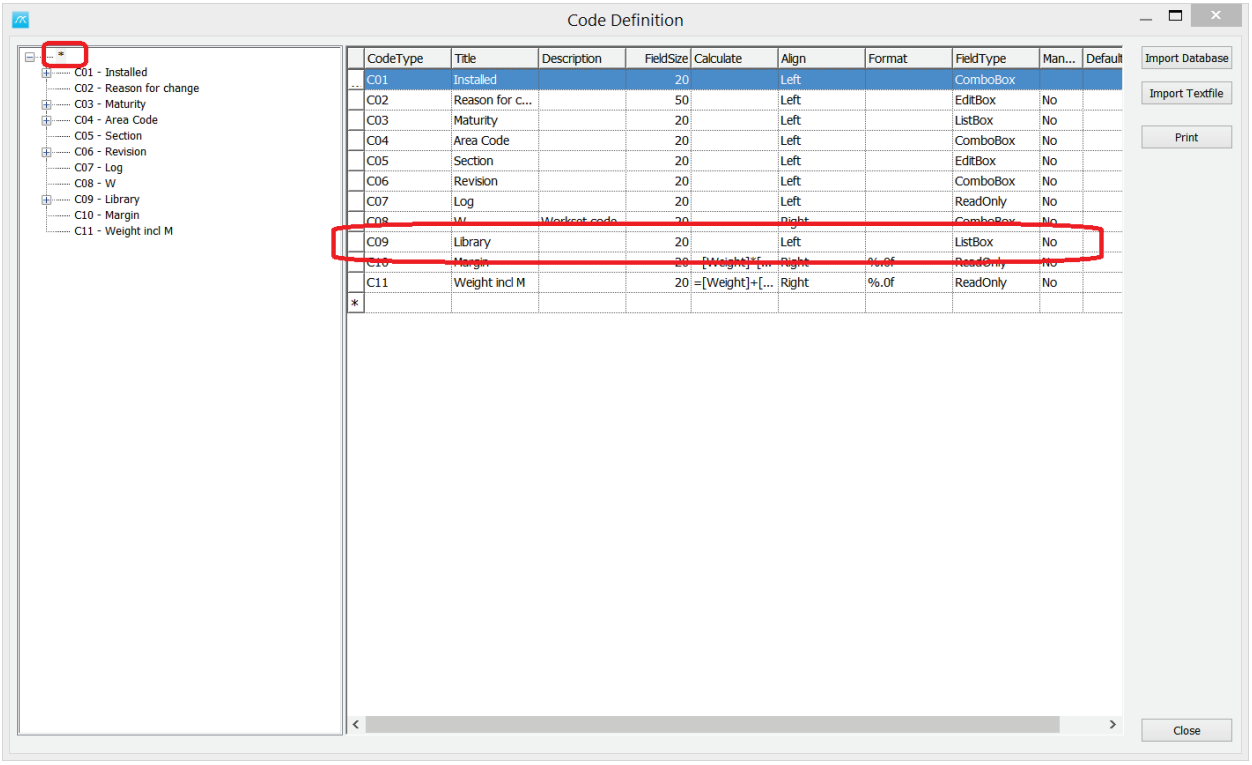
The main window is now updated with the corrected weight.



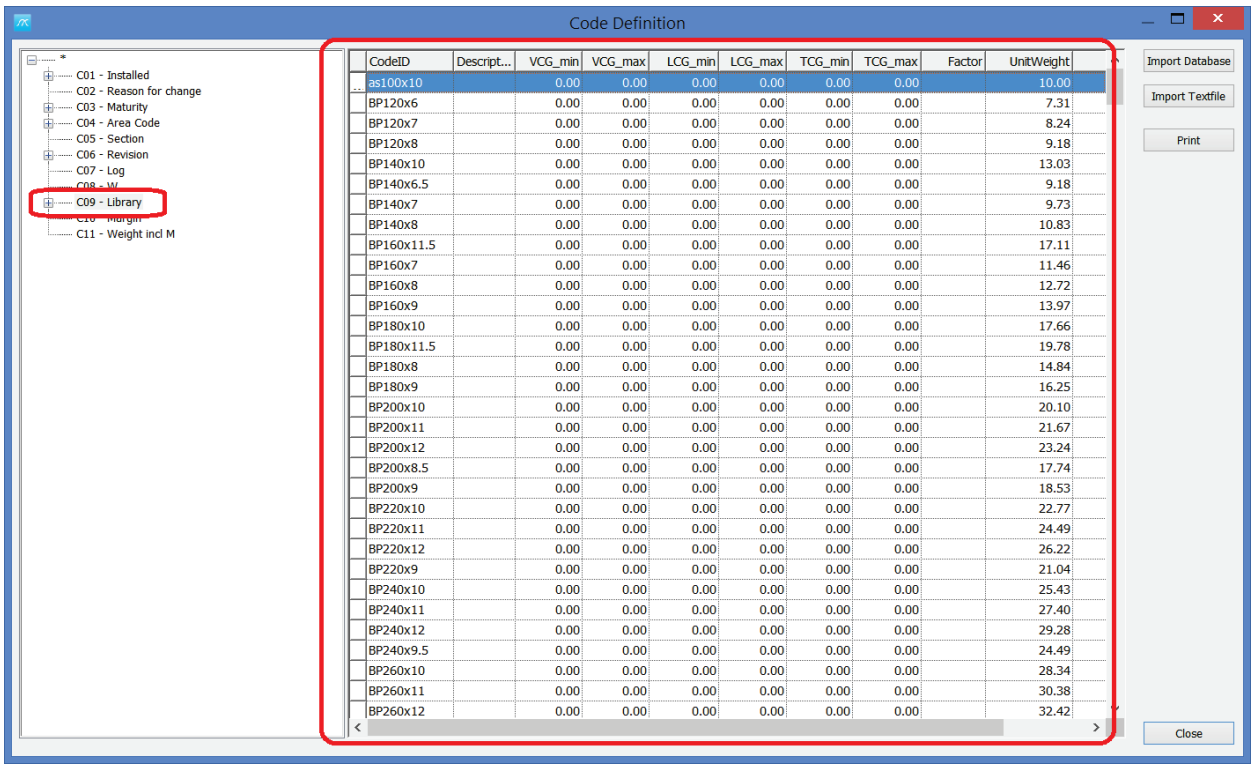
LW - Lightship	5 000 Σ		10.00	40.00	-0.00
R - Remainder	202		28.37	55.66	16.07
H - Hull	3 238 Σ		8.60	36.97	-0.90
E - Equipment	1 195 Σ		11.95	45.35	0.46
M - Machinery	365 Σ		5.87	40.71	-2.40

Step 9: Create a UnitWeight Library

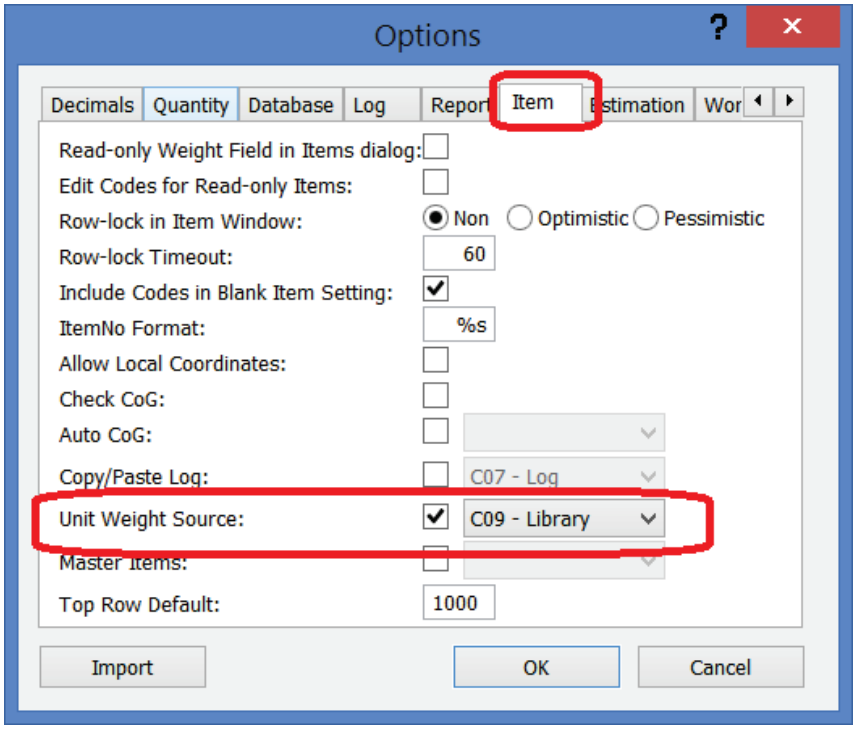
Create a custom code for the library (call it what you want). Make it a Combobox or a Listbox



Fill the custom code with codes representing the library, remember you can to copy/paste from Excel



In the Options dialog (menu: View->Options in main window), go to the “Item” tabsheet and select your UnitWeight source.



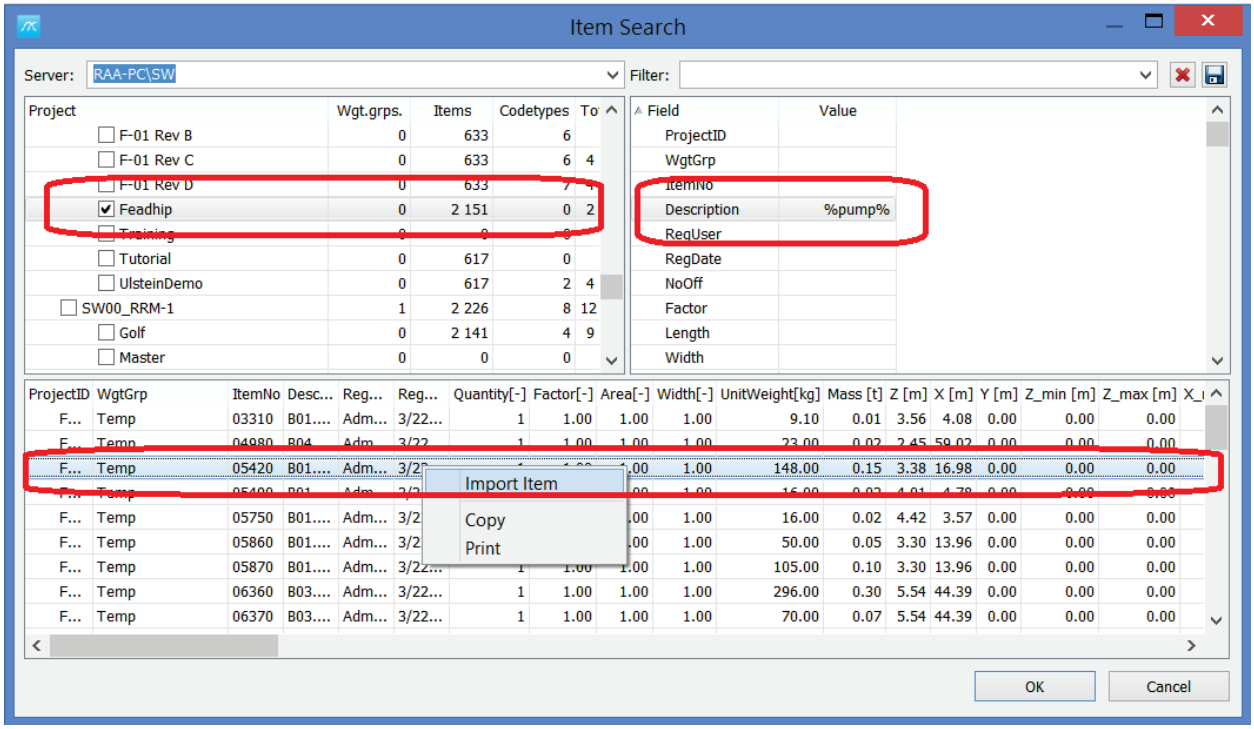
Add your new item code to any Item Settings that have been made prior to the custom code.

Step 10: Create an Item Library.

Create a special project where you add equipment to the various weight groups.

In the project you want to import, go to the Item Window with the item weights, go to menu View->Items on Server…

In the Items on Server window, select the library project (Feadship in this example), do any filtering needed to find the equipment (see Description filter example here), select the item in the list of item, rightclick and select “Import item”.



Getting Results and Output

In this section the following will be shown:

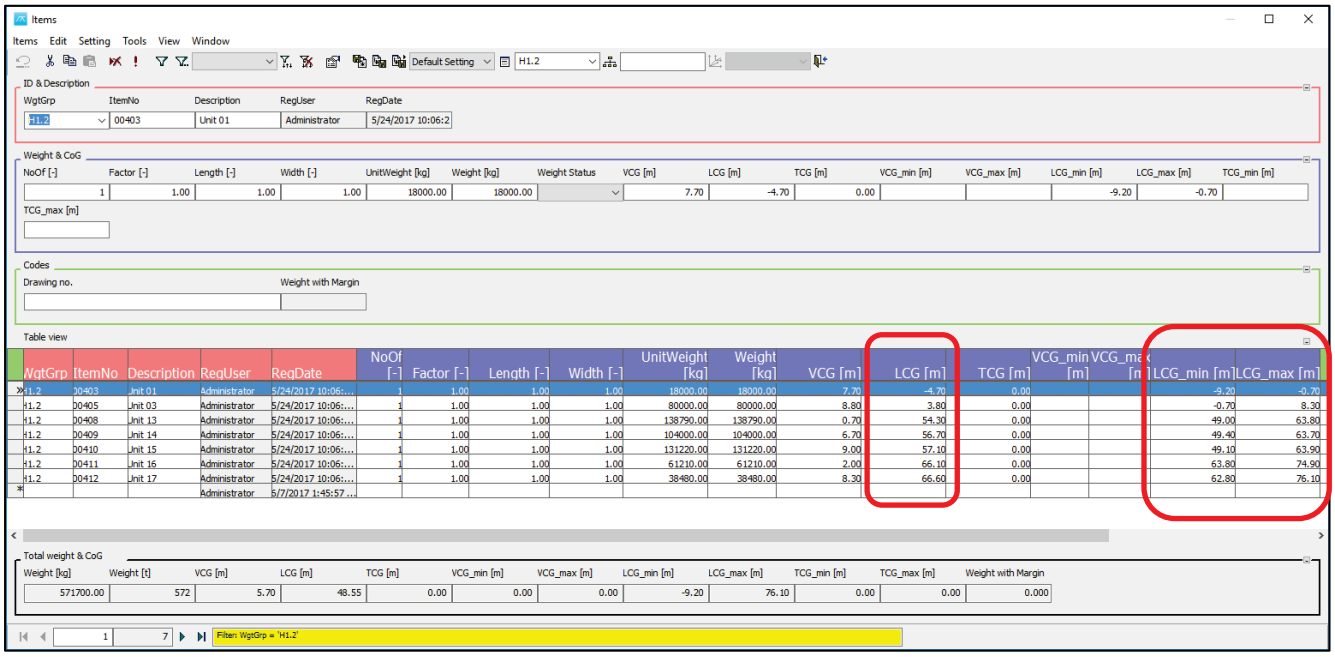
- Making the Weight Distribution Curve
- Calculation of Inertia and Radius of Gyration

Step 1: Open a Project with Weight Data

Open a previous project that has weight data.

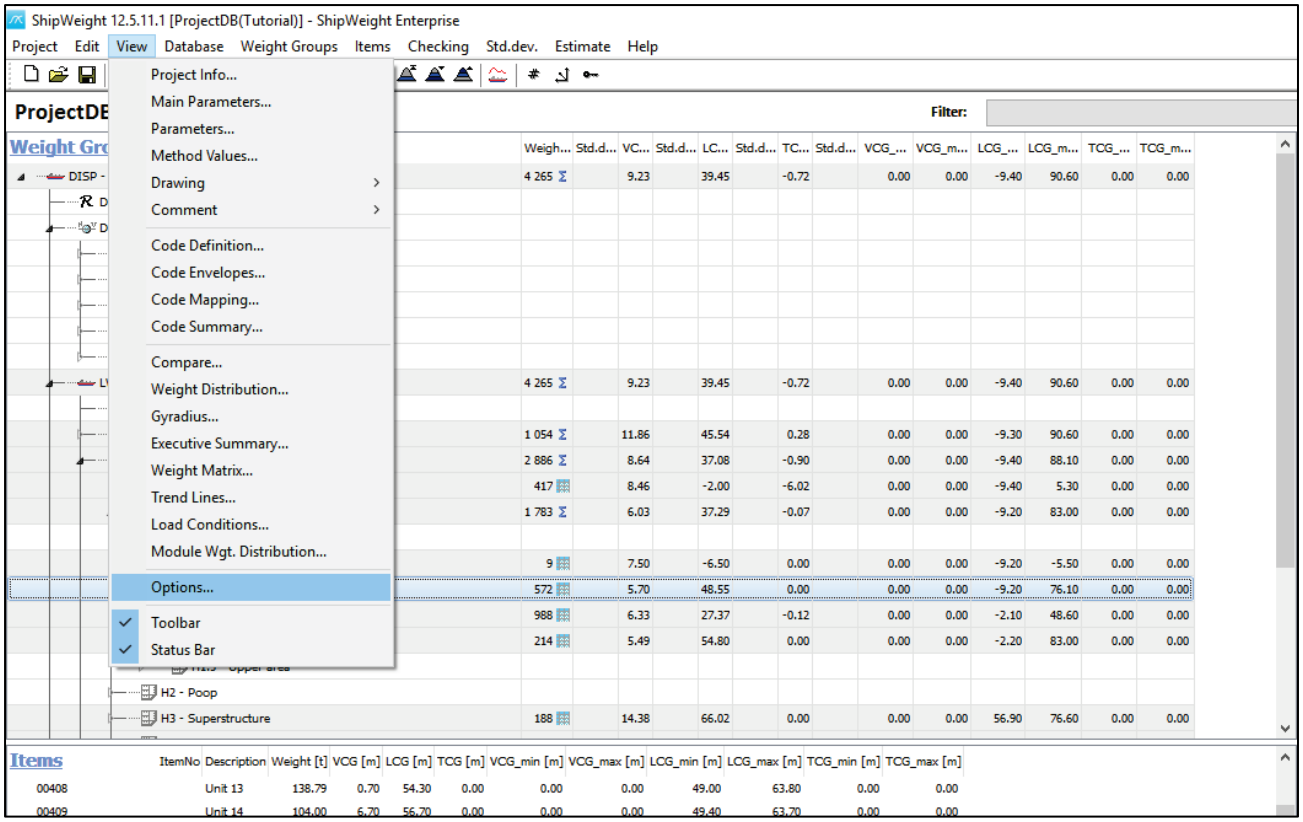
Step 2: Check the LCG_min and LCG_max Values

To get a good distribution curve it is a big advantage if you have the starting point and ending point of your weight items. Basically you should have the LCG, and the LCG_min, LCG_max values for each item to get a good weight distribution curve.

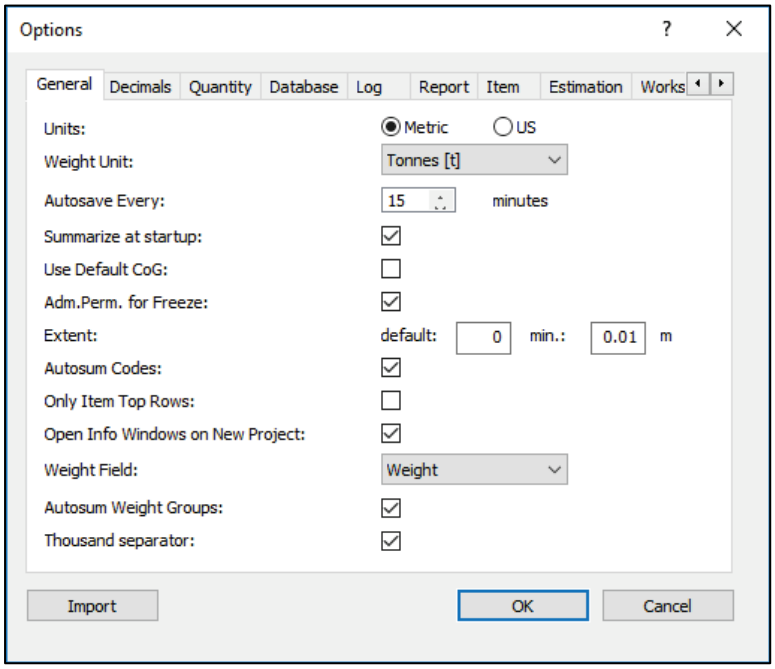


Step 3: Set Default Extent for Items without Extent Data

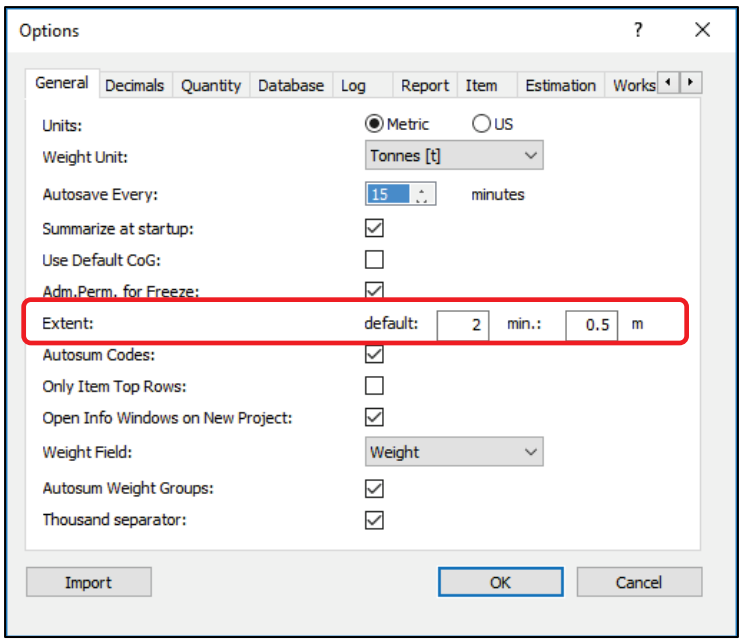
However if there are some items who do not have extensions, default extensions can be set to be used for those. To do this go to View menu and select Options:



The Options window will pop up:



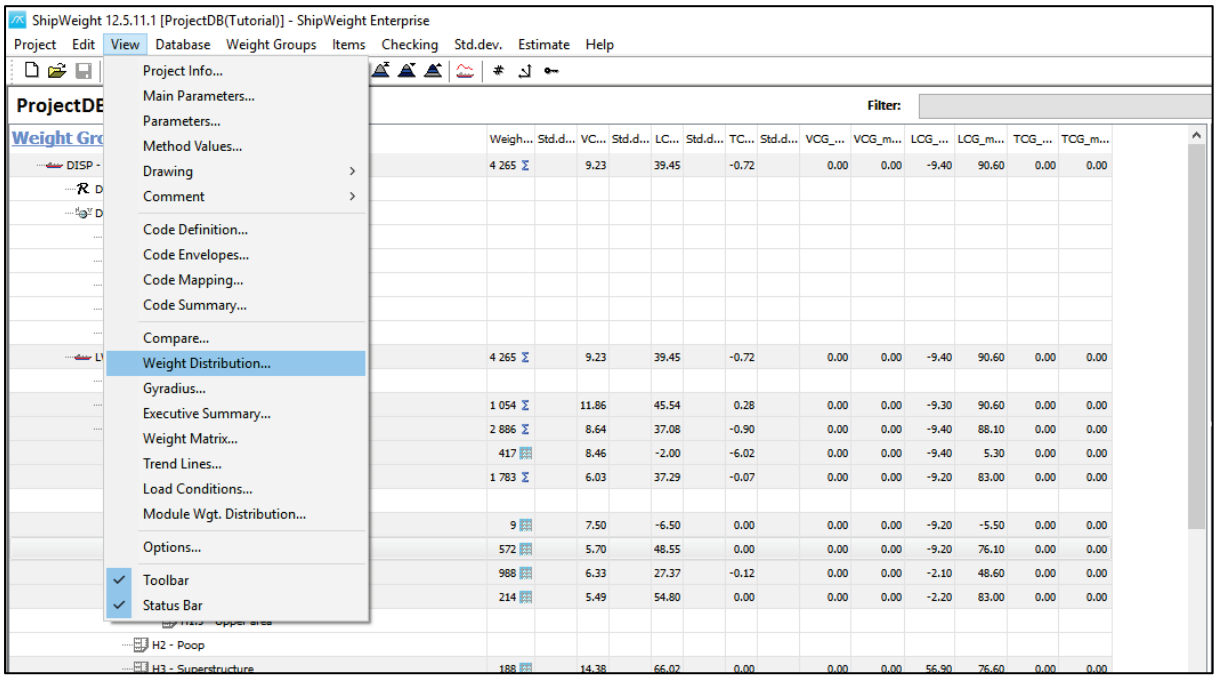
Change the default Extent from 0 to 2 and min. from 0.01 to 0.5 meters:



And then click OK.

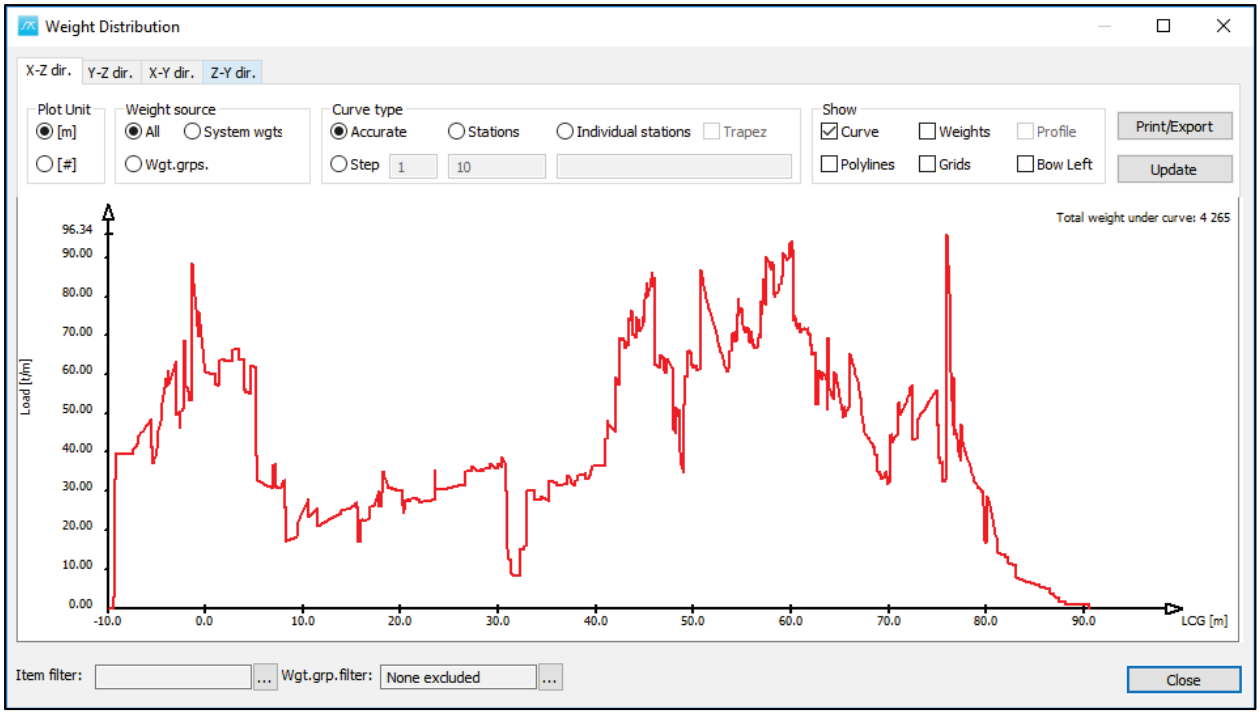
Step 4: Open the Weight Distribution Window

Now, to open the weight distribution window go to View menu, and select Weight Distribution…:

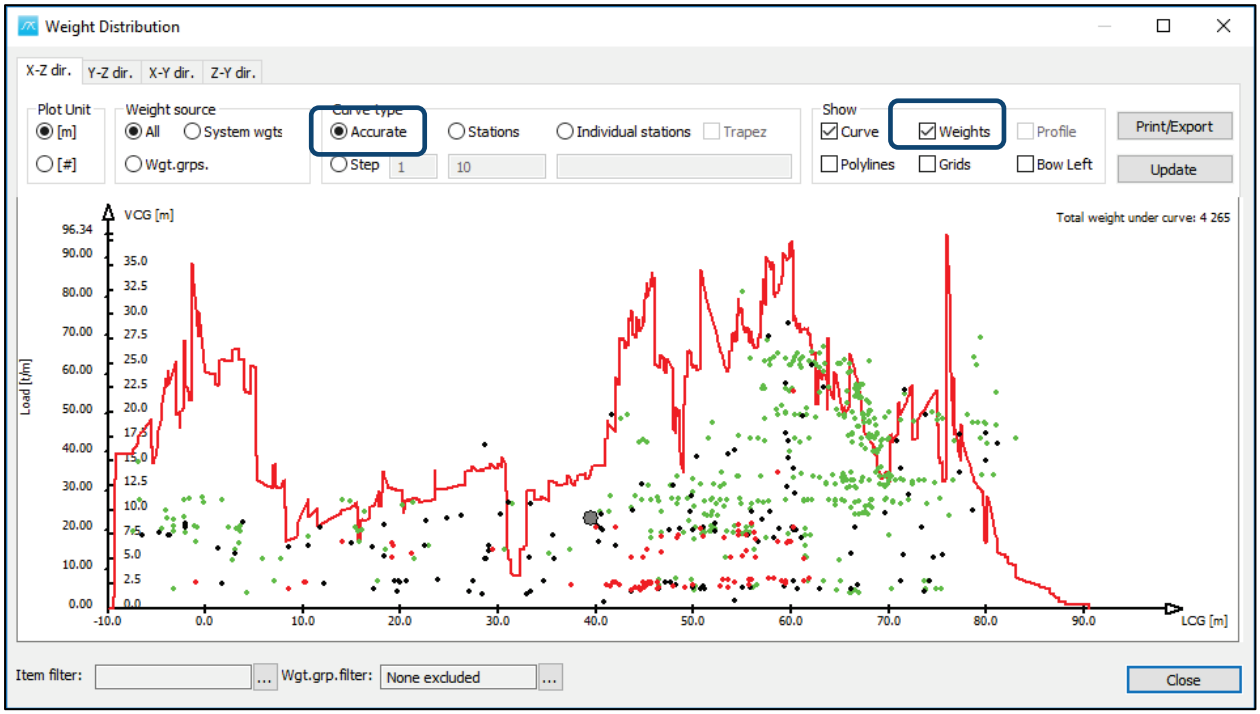


Or the shortcut from the toolbar  .

Then the Weight Distribution is opened for the vessel:



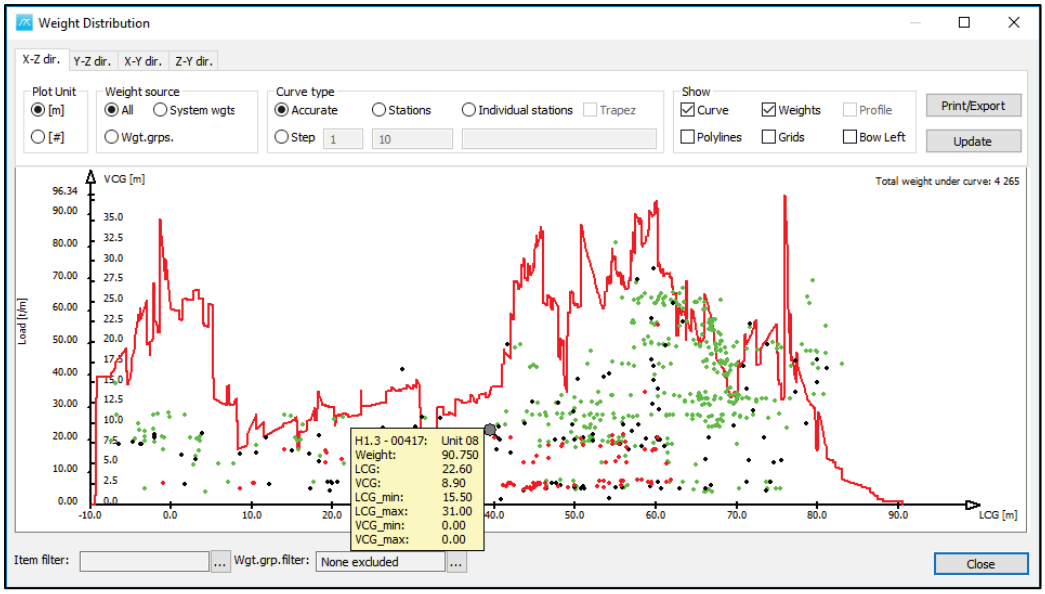
By default we are looking at **Accurate** weight distribution curve type, and to see the data behind the curve you can enable the plotting of the **Weights** option:



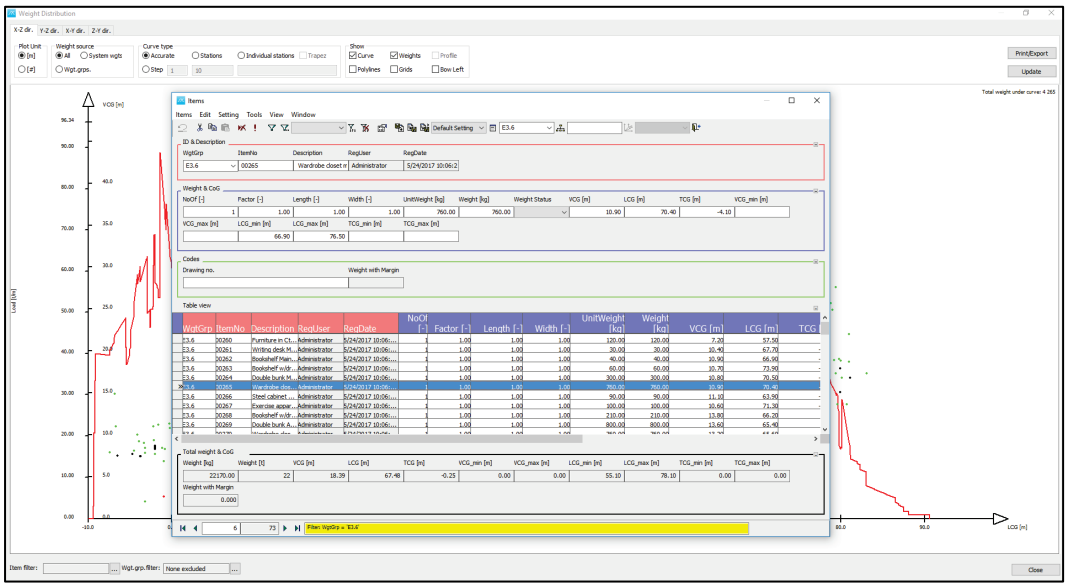
Step 5: Check the Weight Data

The center of gravity location for each weight in the database is plotted. The black dots represent the steel weights, the green dots for equipment weights, and the red dots for machinery weights.

To check the weight data for any dot, click and hold on the specific dot:

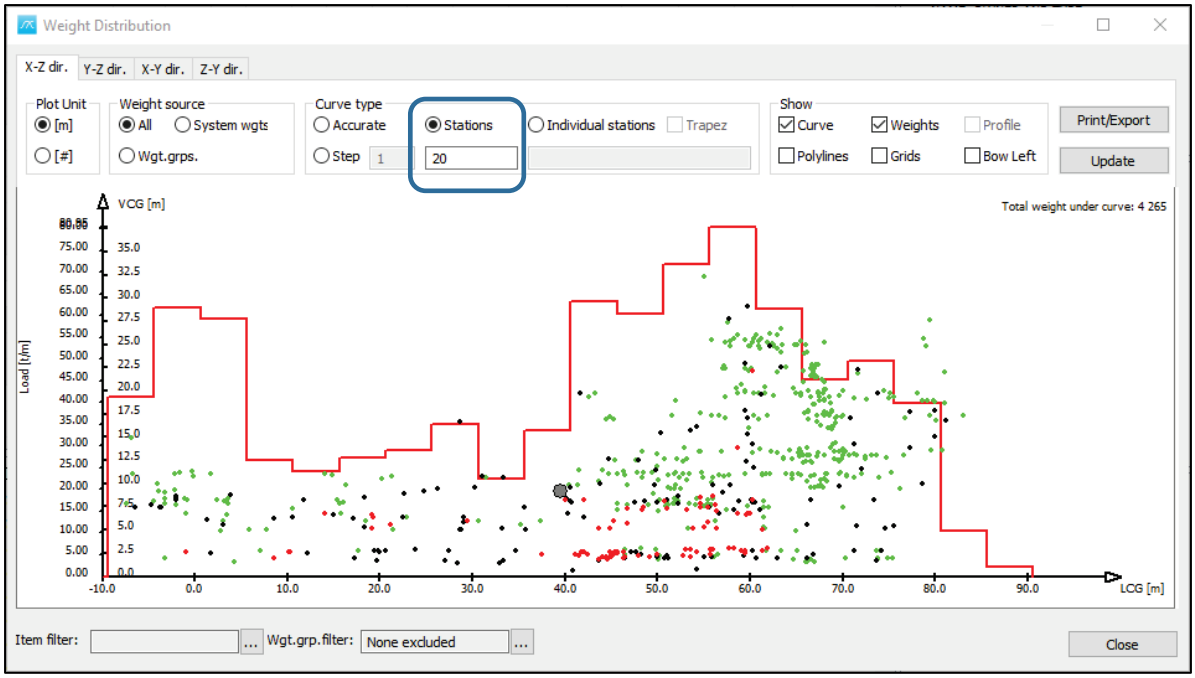


In this way you an check suspicious looking items. If you find some items which are not correct, the double click on the point and it will bring up the Items window, and finds that item for you and allows you to change that item:

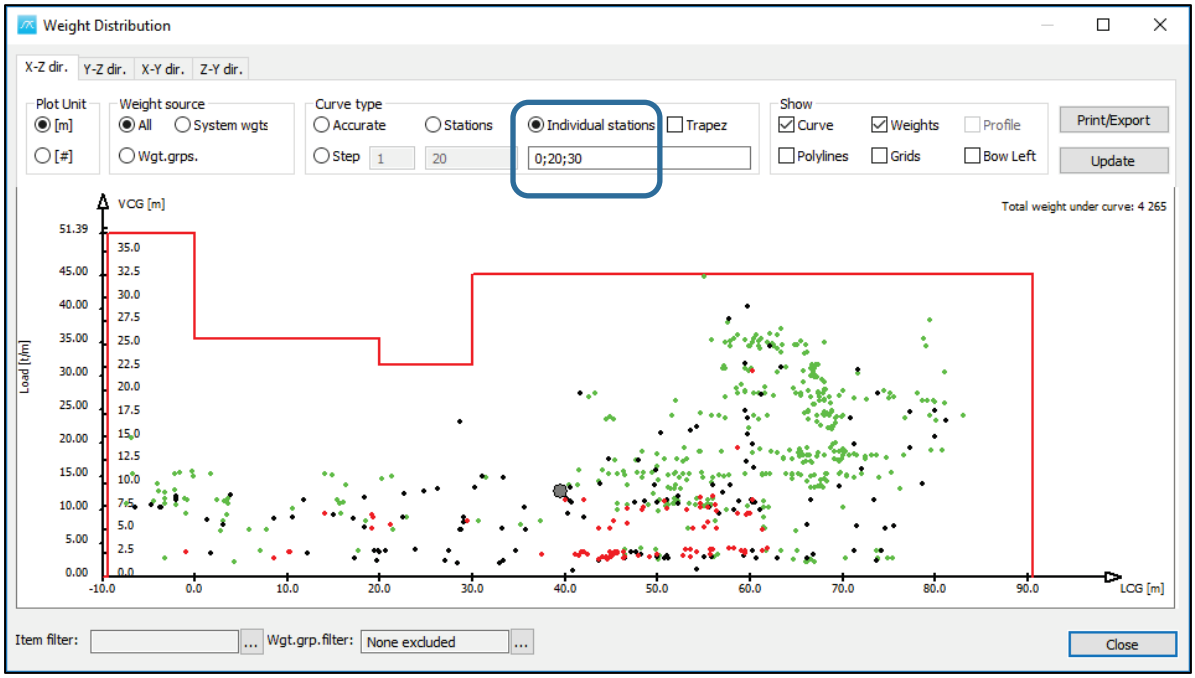


Step 6. Transform the Curve to a Given Number of Stations

Now in addition to get this accurate curve, you can also select **Stations** curve type and type in **20** stations curve:

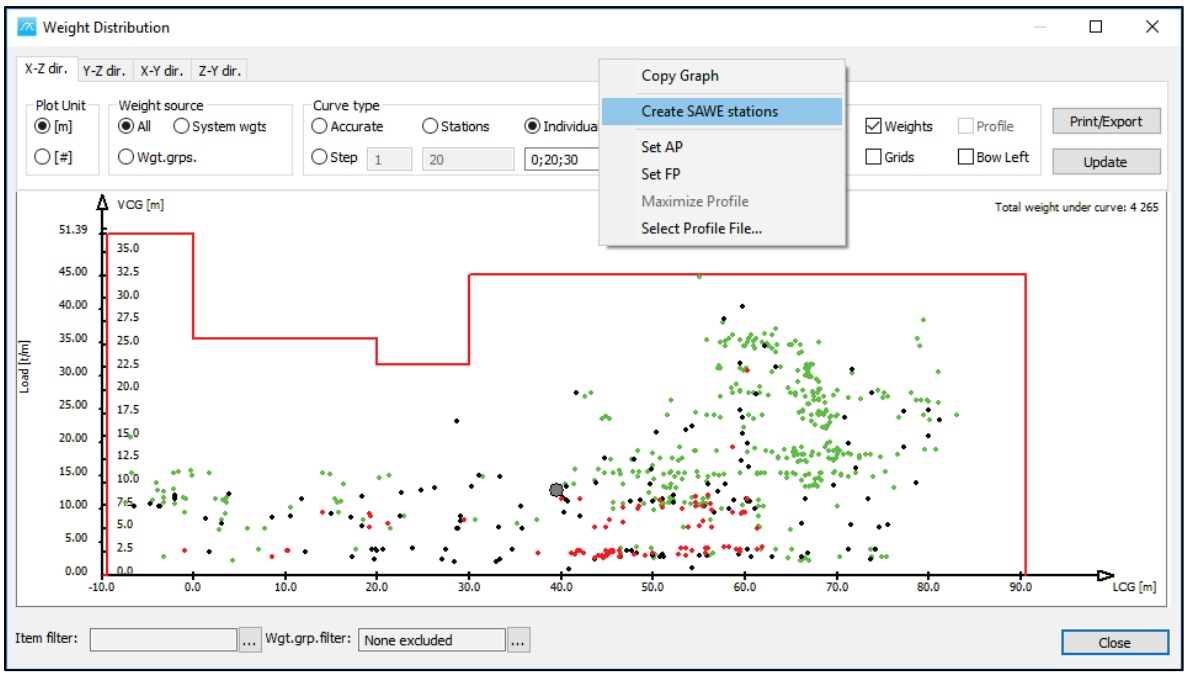


You can also do **Individual stations** curve type, and by typing the numbers and points **0;20;30** where you want to see the various stations:

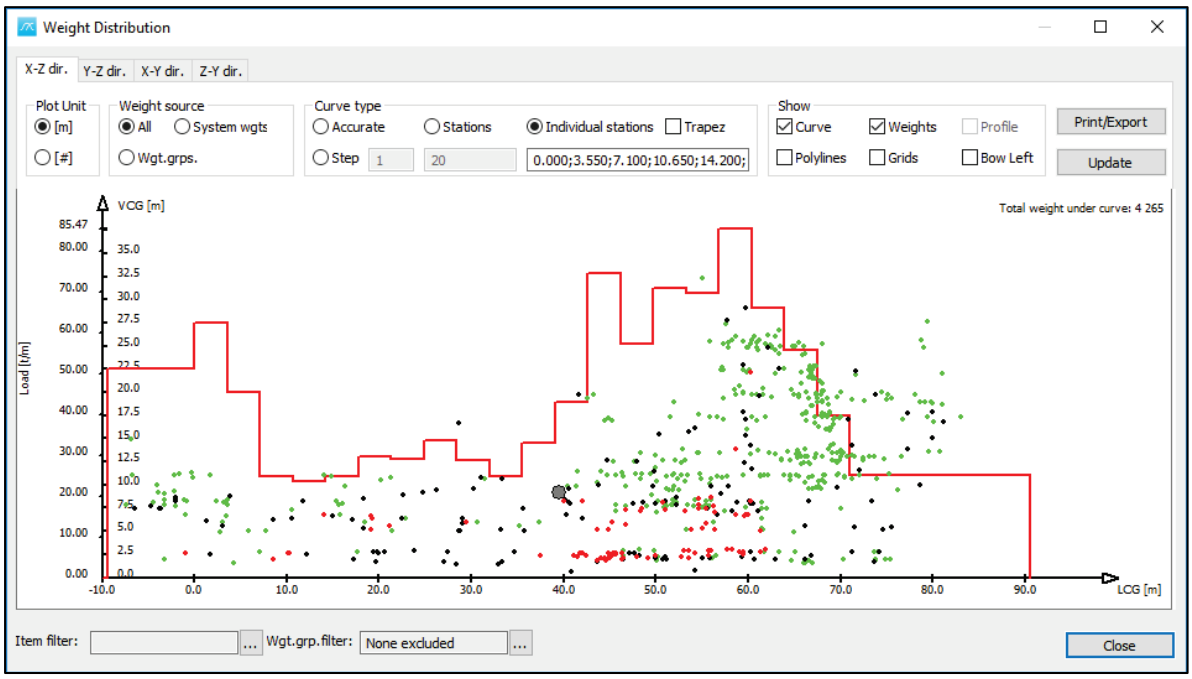


Step 7: Create a SAWE Curve (Individual Stations)

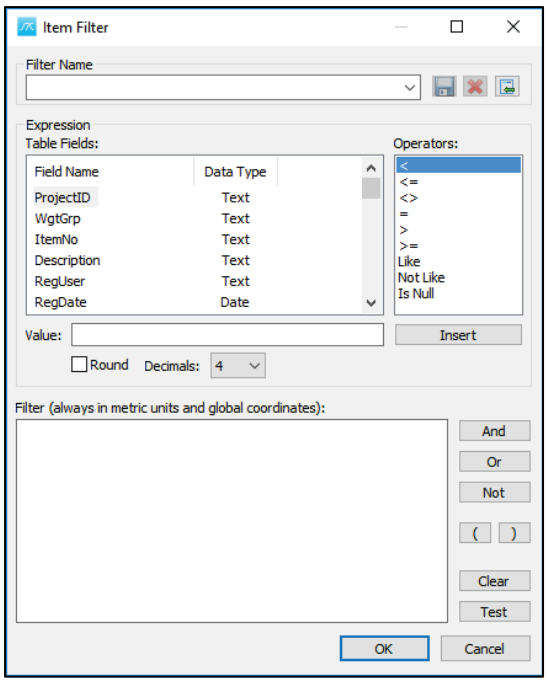
You can also right click and select **Create SAWE stations**:



Which will be default give 20 stations between AP and FP and then 1 station in front of FP and 1 station behind the AP:



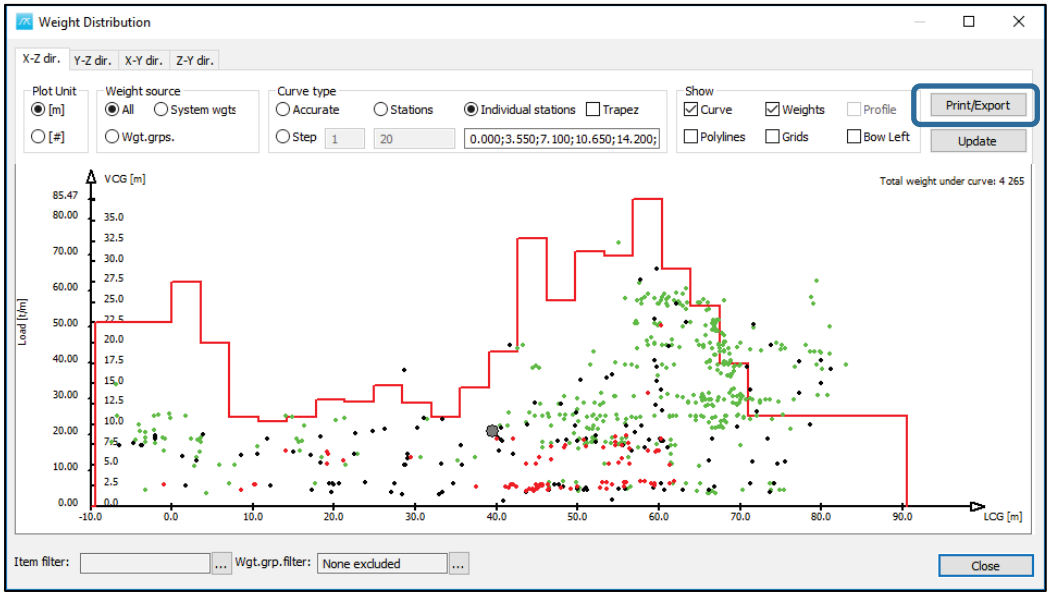
In addition, there is also the Item Filter, can be opened from the Item filter  browse button in the lower left corner of the Weight distribution window:



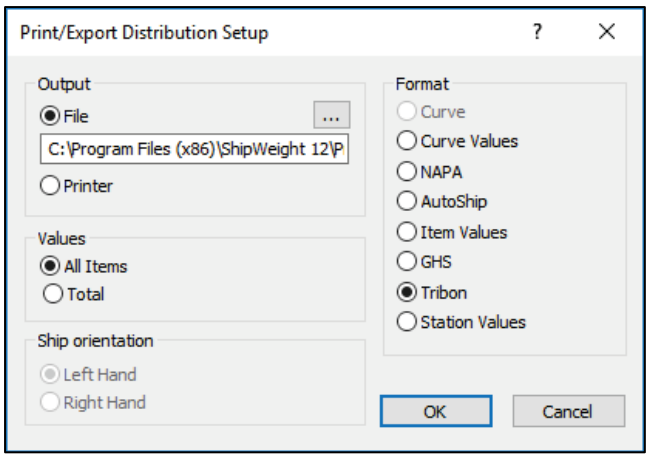
And you can set any filter you want, WgtGrp, ItemNo, Description, etc.

Step 8: Export the Curve to a Stability Software Format

If everything looks ok with the curve, you can go and export the weight distribution curve by using the Print/Export button:

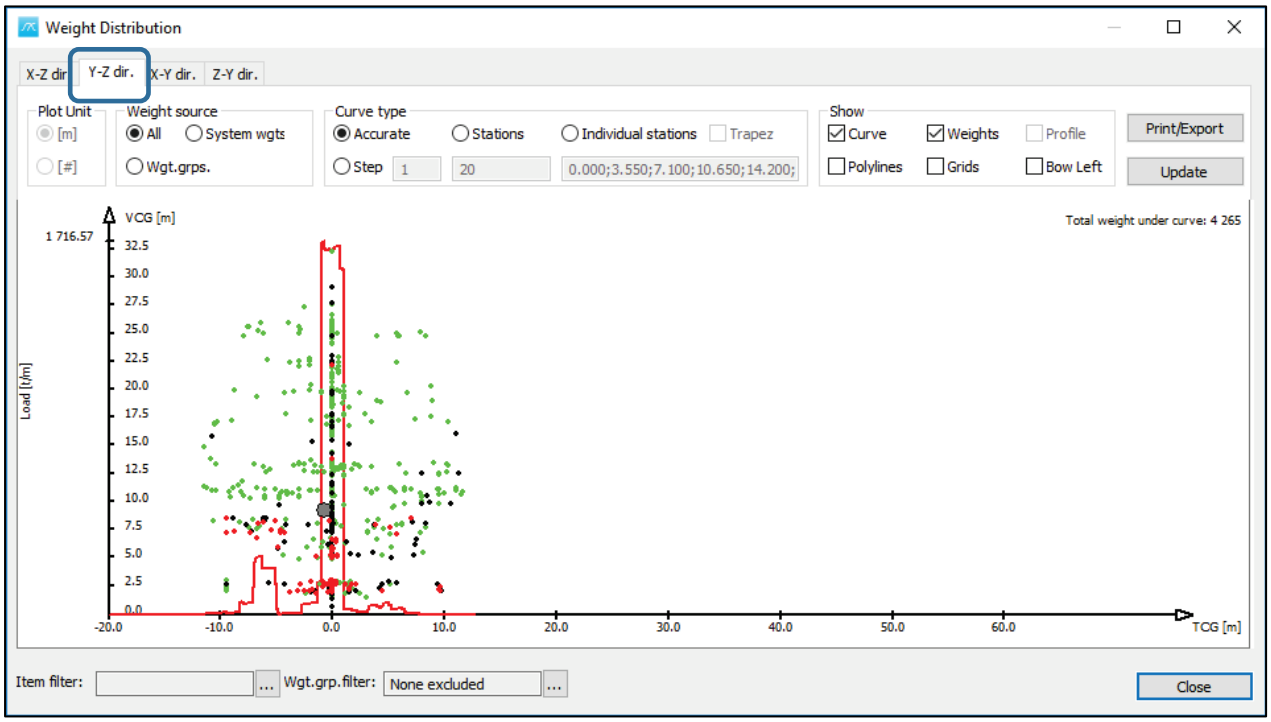


The Print/Export Distribution Setup window pops up and you can select the desired Format to get formats that are suitable for import to this stability software for doing longitudinal strength calculations:



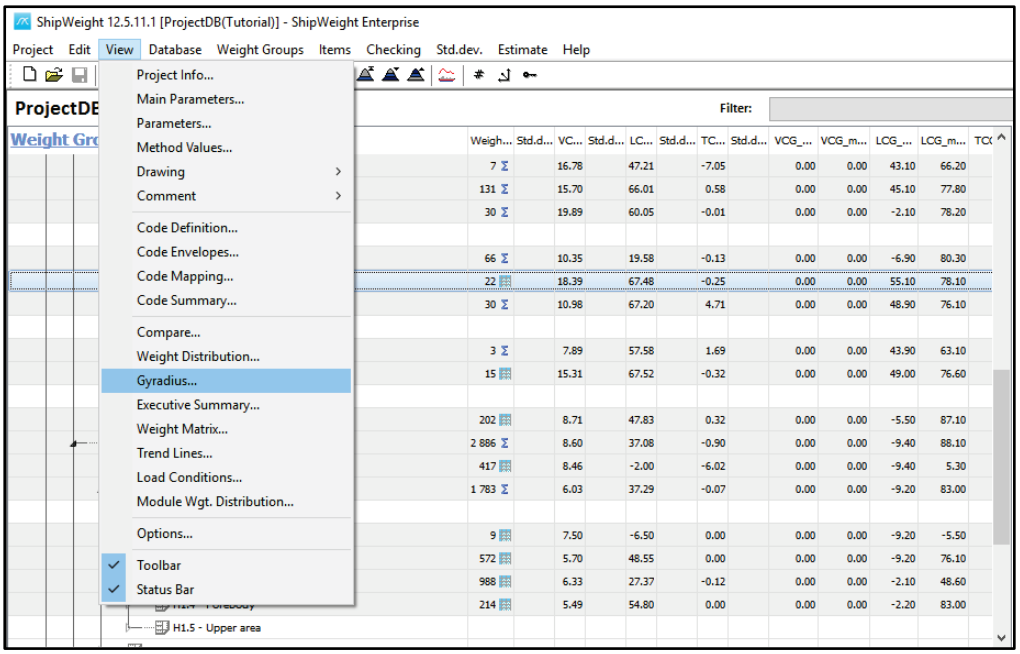
Step 9: Check the Curve in Other Directions

Finally, the user should know that not only the longitudinal extent (**X-Z dir.**), but also other directions to look at the curve are available. For example in the Y-Z direction, go to the tab sheet **Y-Z dir.**, and it will show the distribution curve over the beam of the vessel:

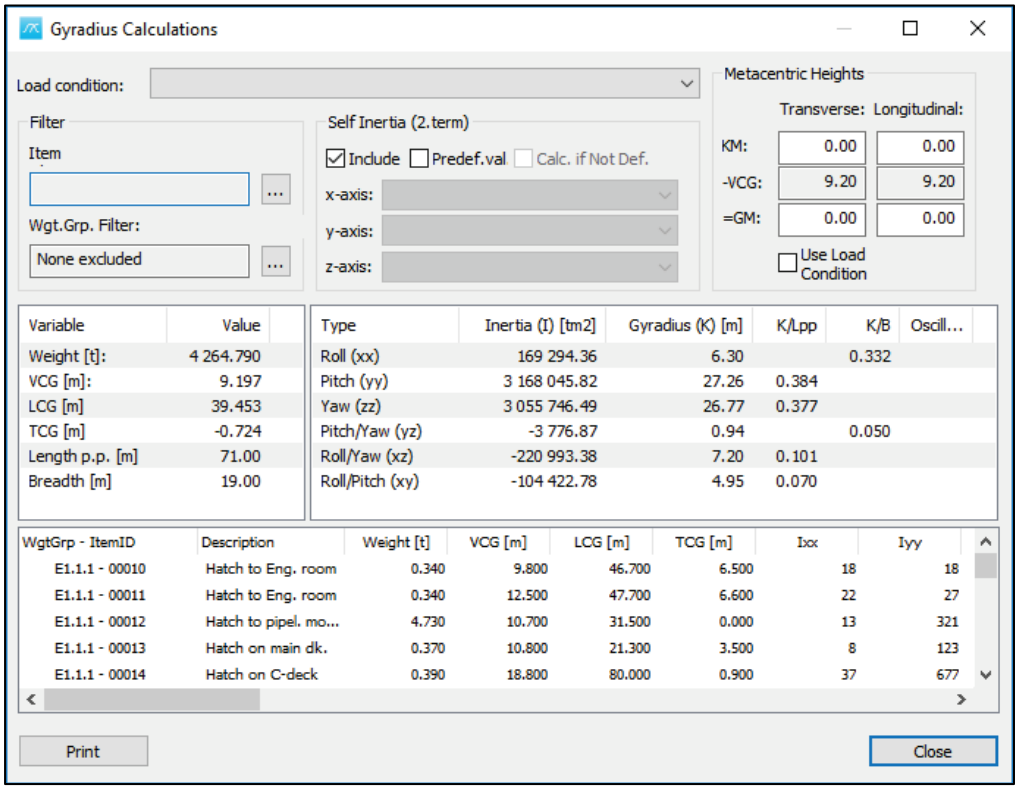


Step 10: Calculate Moment of Inertia and Gyradius

Open the Gyradius Window from the menu View->Gyradius…

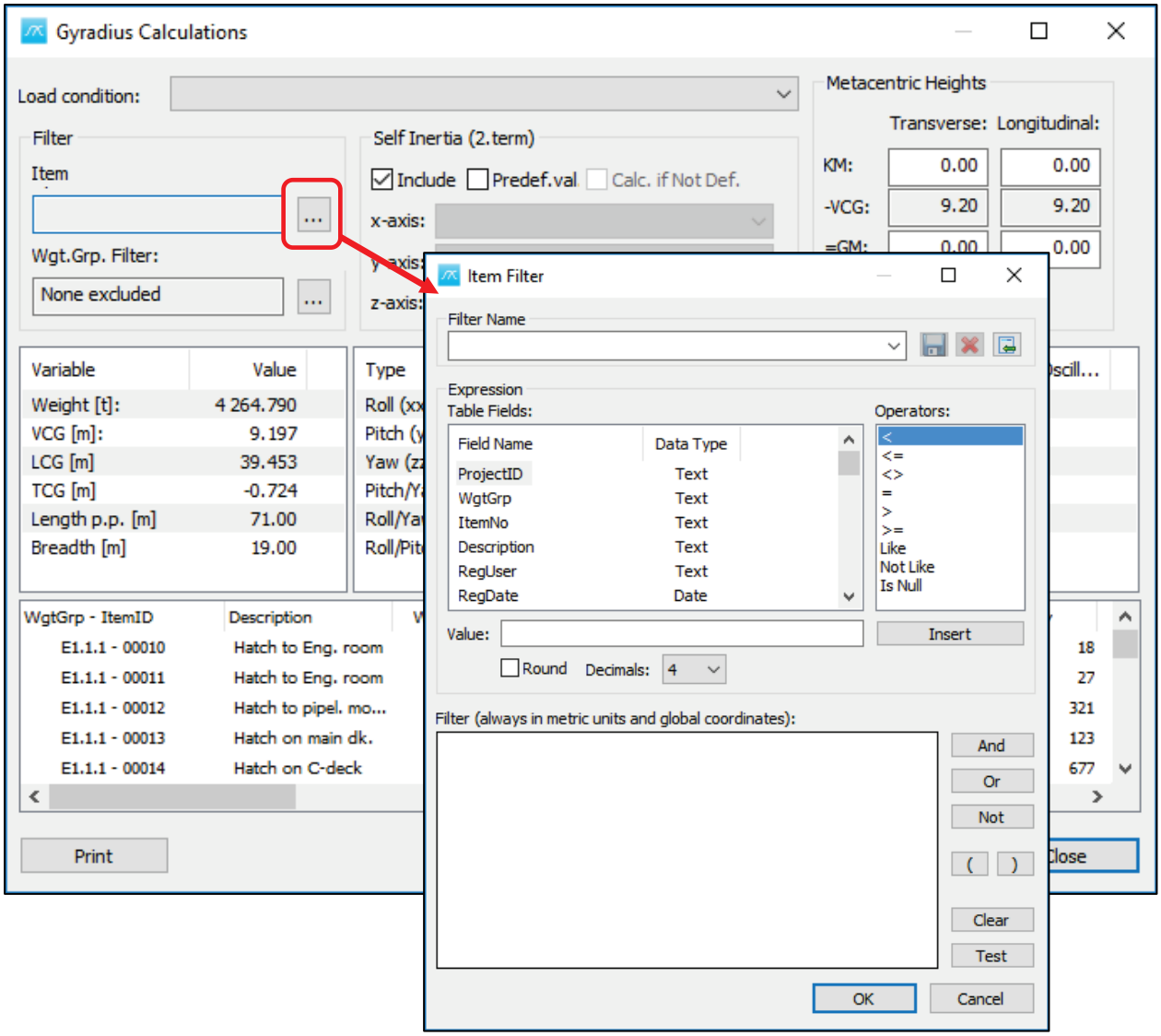


This brings up calculation for gyradius and moment of inertia for the vessel:



Step 11: Apply Any Necessary Filters

Here we can apply Item filters:

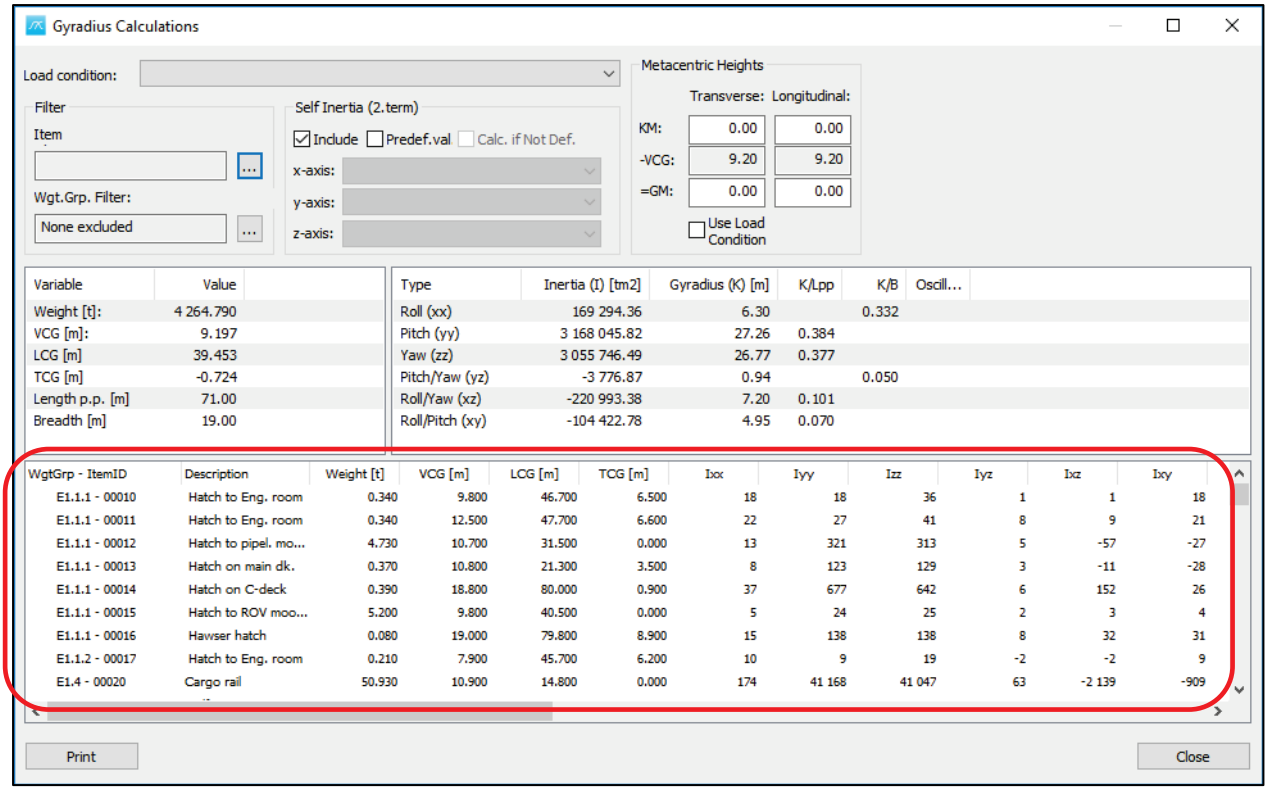


Step 12: Get the Main Moment of Inertia and Gyradius

Now it is calculating Moment of Inertia and Gyradius values for Roll, Pitch, Yaw, and also for the product of inertia Pitch/Yaw, Roll/Yaw, Roll/Pitch:

Variable	Value	Type	Inertia (I) [tm2]	Gyradius (K) [m]	K/Lpp	K/B	Oscill...
Weight [t]:	4 264.790	Roll (xx)	169 294.36	6.30		0.332	
VCG [m]:	9.197	Pitch (yy)	3 168 045.82	27.26	0.384		
LCG [m]	39.453	Yaw (zz)	3 055 746.49	26.77	0.377		
TCG [m]	-0.724	Pitch/Yaw (yz)	-3 776.87	0.94		0.050	
Length p.p. [m]	71.00	Roll/Yaw (xz)	-220 993.38	7.20	0.101		
Breadth [m]	19.00	Roll/Pitch (xy)	-104 422.78	4.95	0.070		

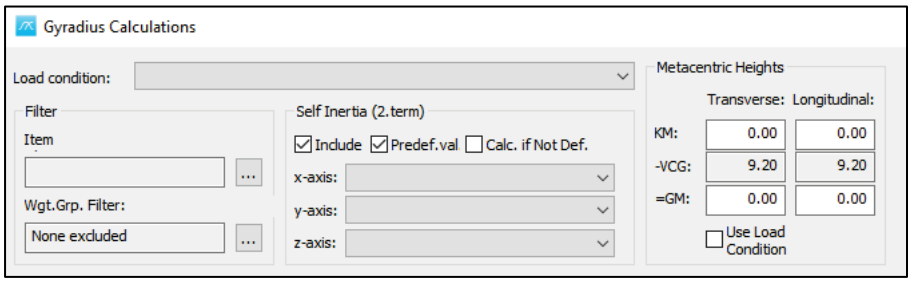
Here you can find details for each individual item:



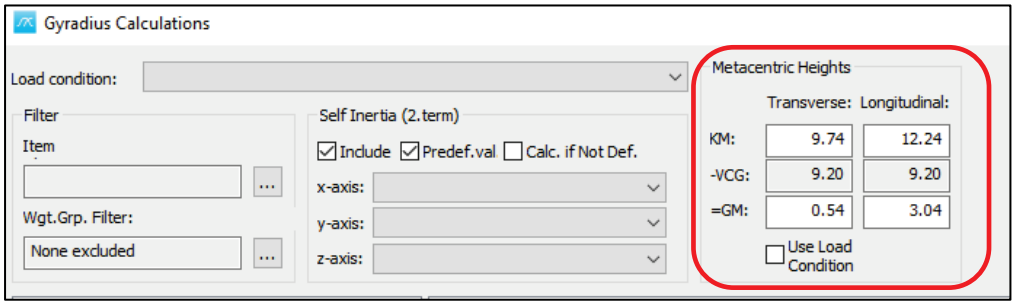
The way ShipWeight is calculating:

The Moment of Inertia by taking the Transverse inertia using the Steiner's theorem or parallel axis theory and that it's done for all items. If there is an item that has extents in all three directions then the item will be approximated to a box and also calculate the local inertia for that particular item.

It is also possible to point to custom codes which can have exact values for the moment of inertia stored in the custom codes if you can get such values from the CAD software.

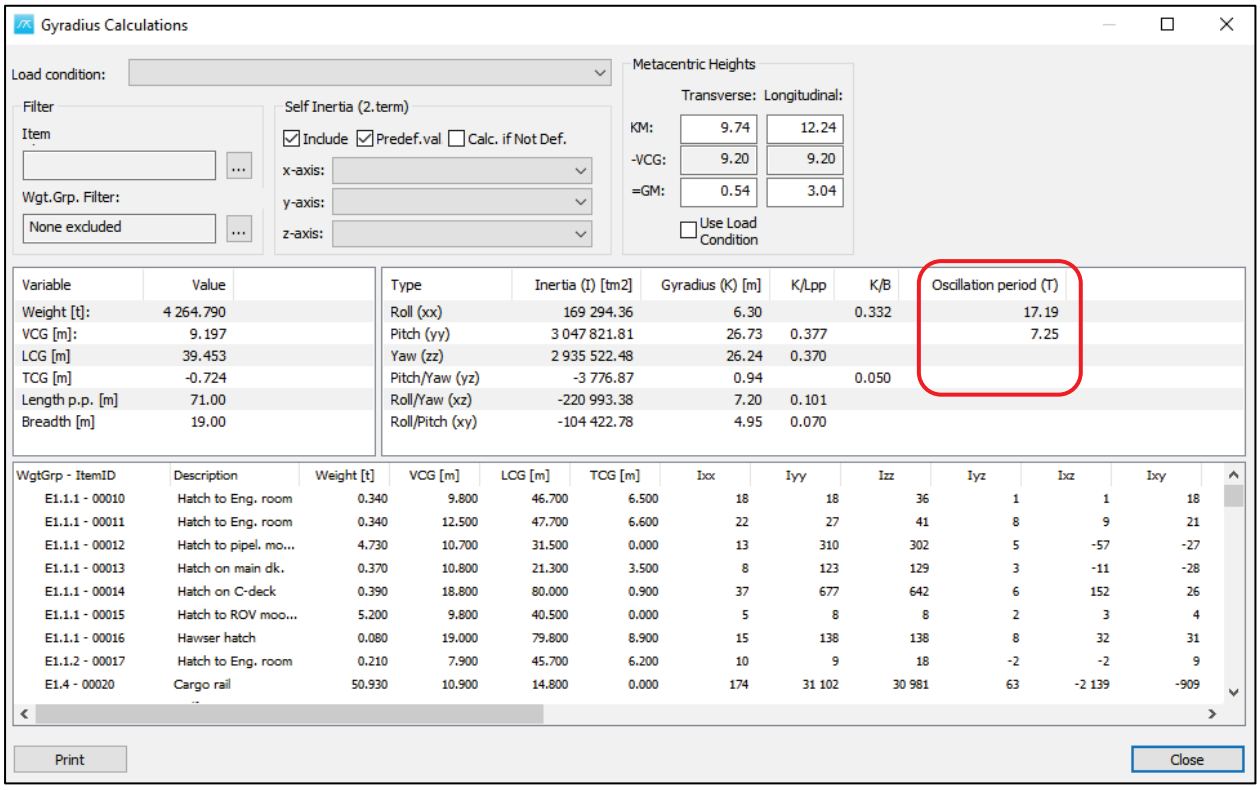


Finally, if the GM values for transverse and longitudinal are known from the stability software. So let's type in some values:



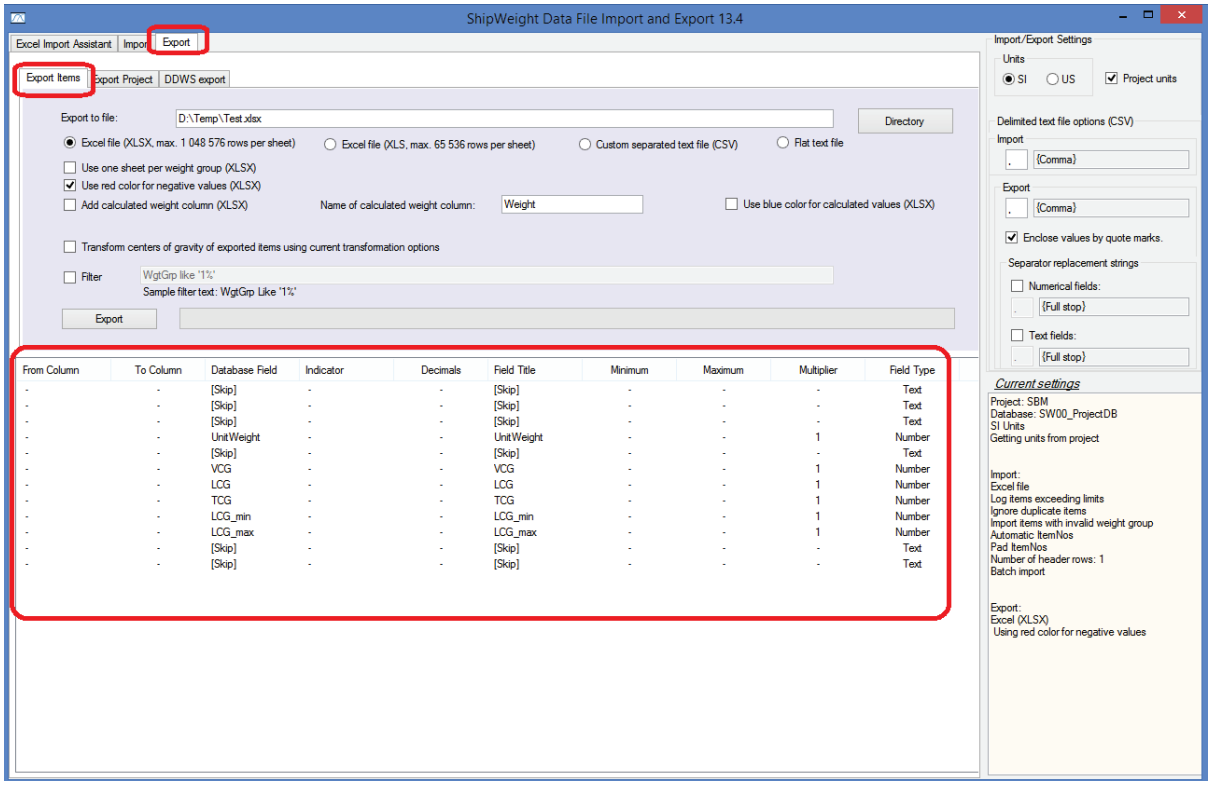
Step 13: Calculate the Oscillation Period

Also based on this we can calculate the Oscillation period (T):

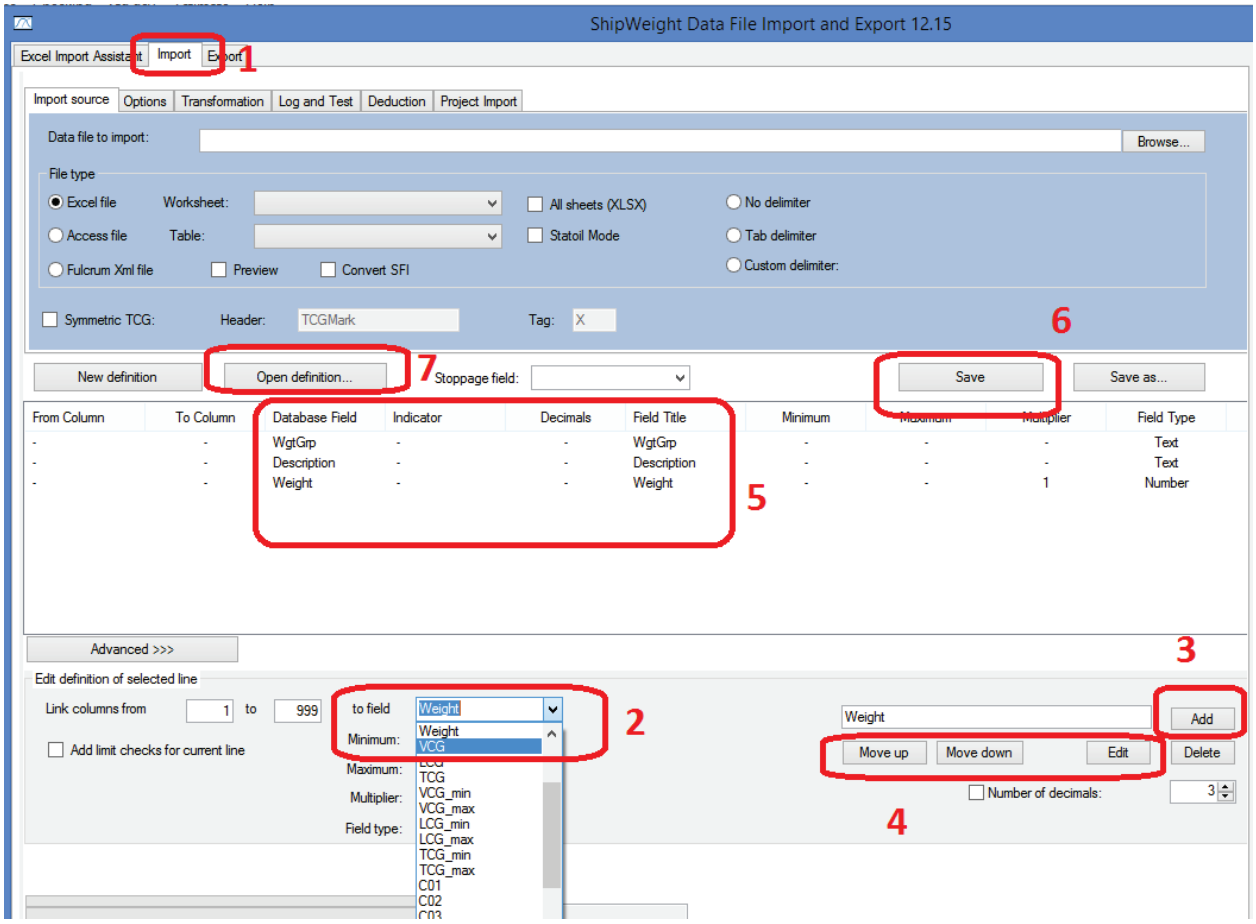


Step 14: Export Data to Excel and/or text files

Export is done in the same window as the “Import Data Window”, but by selecting the tabs “Export” and “Export Excel”. Proper settings must be set for the export options and a saved mapping must be used to define the export.



If you do not have a saved mapping, the mapping must be created manually. This is how to to it:



Steps (see numbers in red in picture):

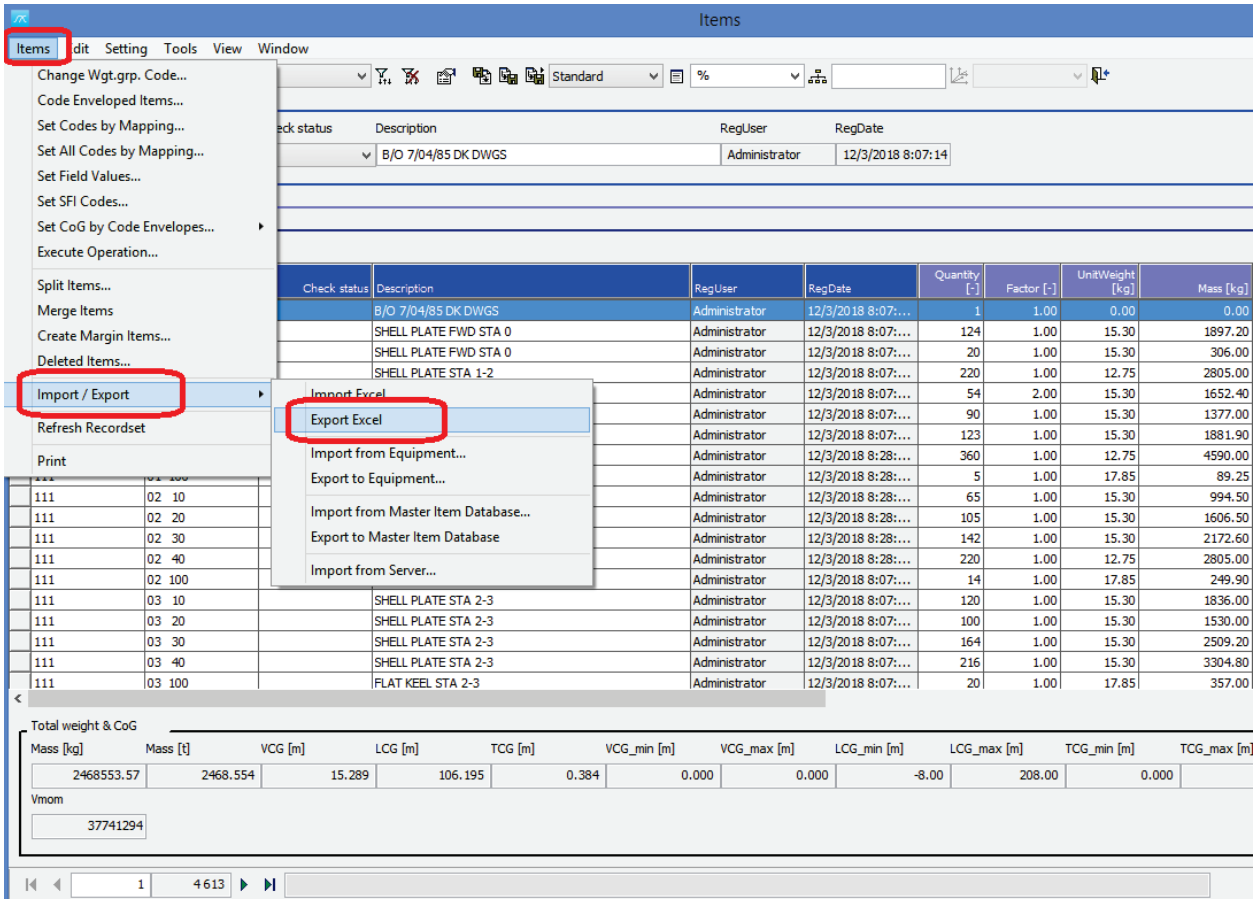
1. Go to Import tabsheet
2. Select the first column you want to export in the droplist
3. Click the Add button to add to export mapping. Repeat step 2 until all columns you want to export has been selected.
4. If you want to change the order of columns, select a row in 5 and use buttons Move up and Move down as needed (only if you need to change order)
5. This displays your export columns.
6. If you want to you can save the mapping by pushing button Save (not necessary to do the export)
7. If you have already saved a mapping, you can open it from this button.

This method of export is the fastest and should be used if you have many thousand items to export. If the number of items are not so many, you may use alternative method, see next page:

Alternative method if number of items is not too many:

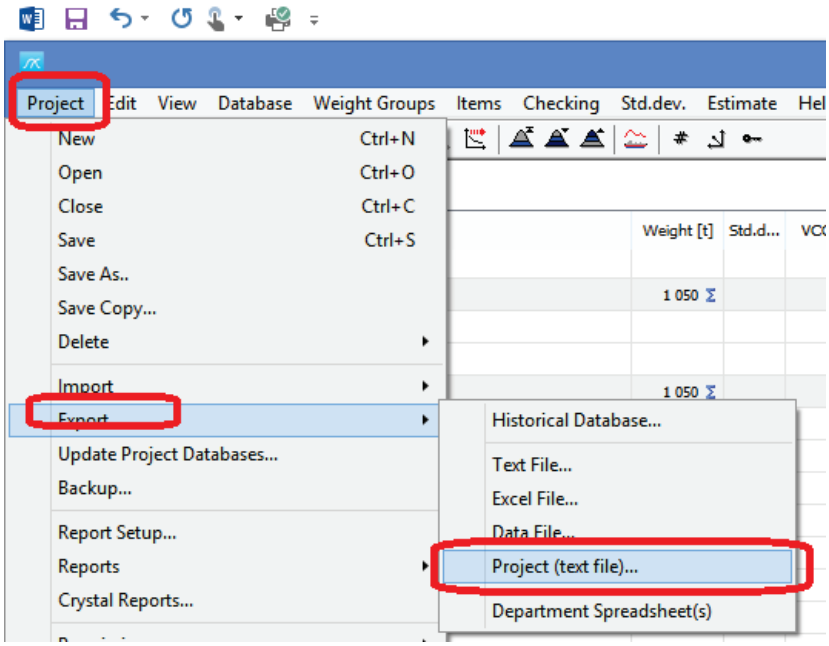
Export from the Item Window in ShipWeight, menu Items->Import/Export->Export Excel, see picture below.

This will export the items in the table view in the Item Window.



Step 15: Create Backups of Your Projects

Create a text file backup of a single project by going to the menu Project->Export->Project (text file).



You can restore the file by going to the corresponding menu item in the Project->Import menu,

Backup and restore of the complete database can be done by going to the menu “Project->Backup”. Note that this backup will only work if you have backup permissions on the SQL Server.

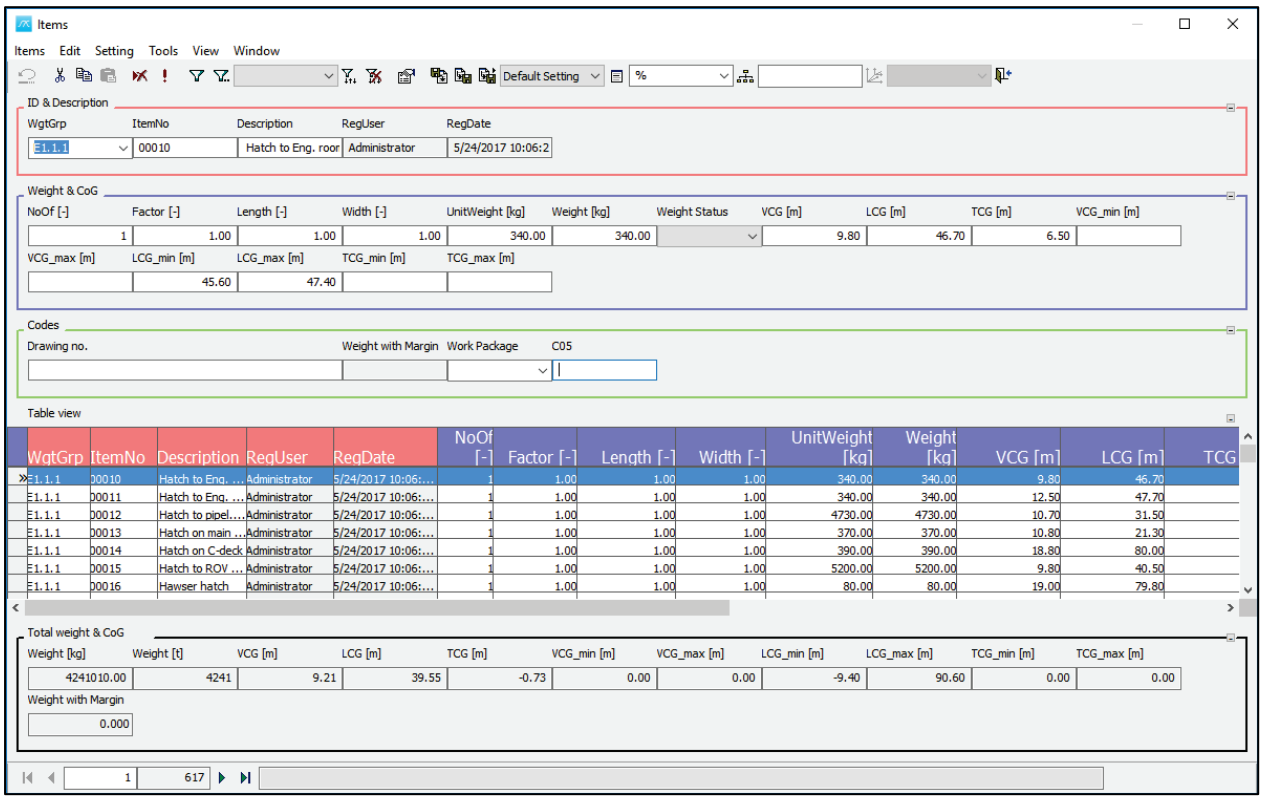
Quality assurance (QA) – Compare and Vetting Projects

Below, the following QA methods will be shown:

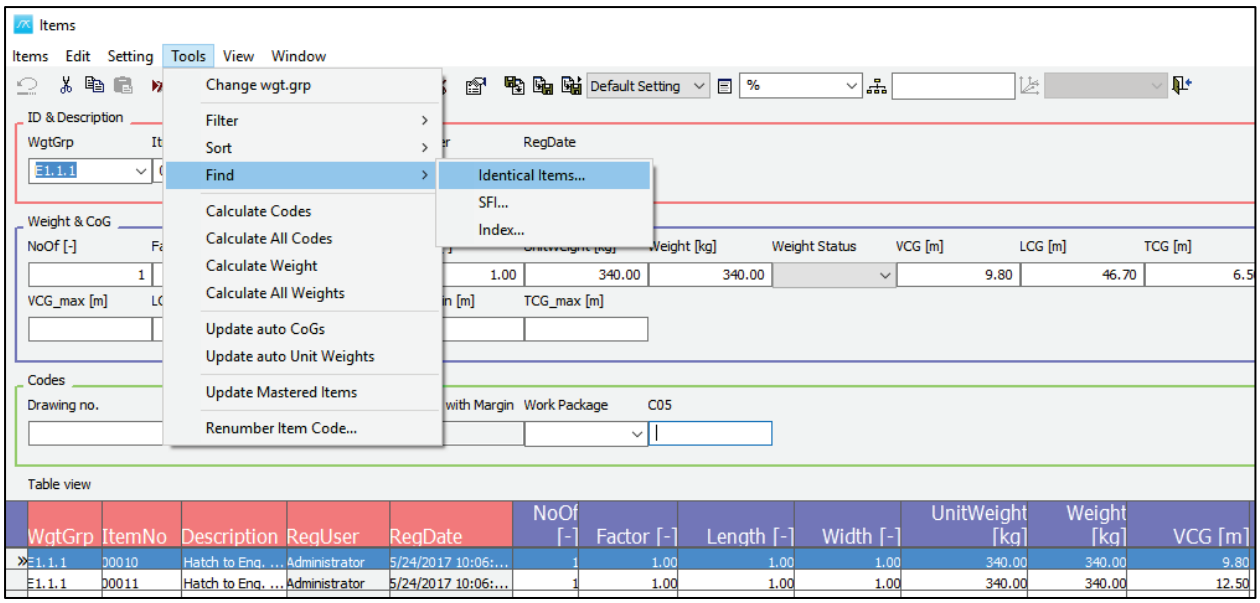
- Find duplicate weight items
- Checking for extreme values
- Compare function
- Code Envelope Check

Step 1: Find Duplicate Items

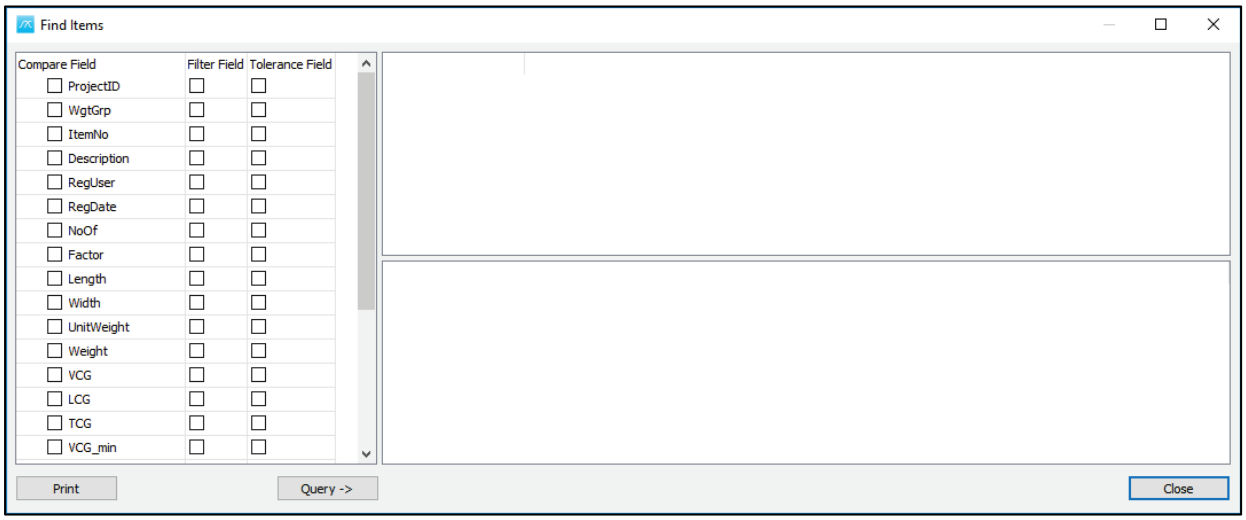
Open up the items window to see all items:



On the Tools menu choose Find -> Identical Items…



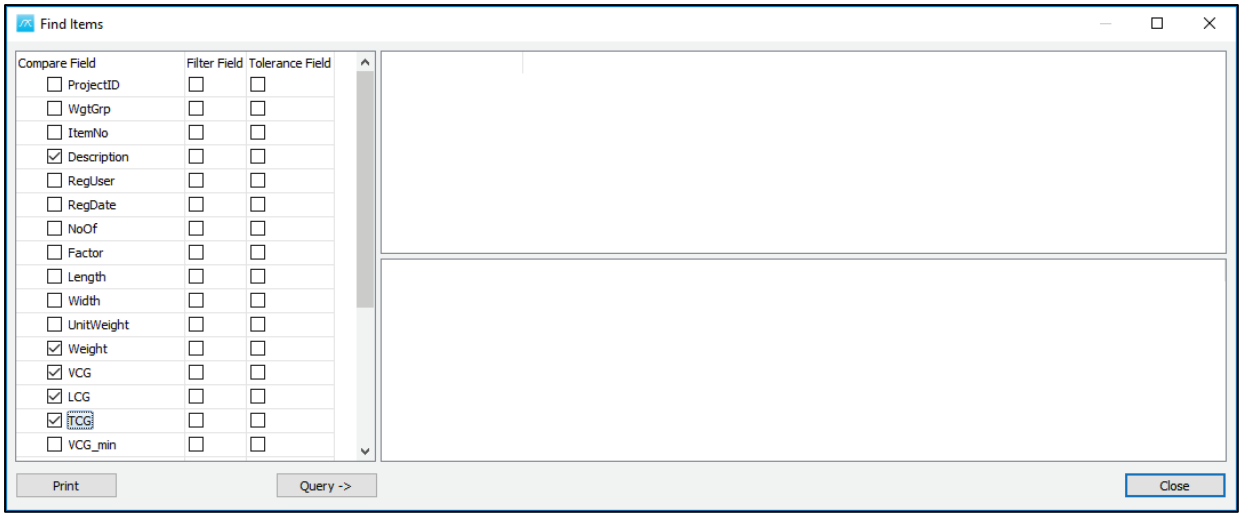
This will bring up Find Items window to help you find identical items:



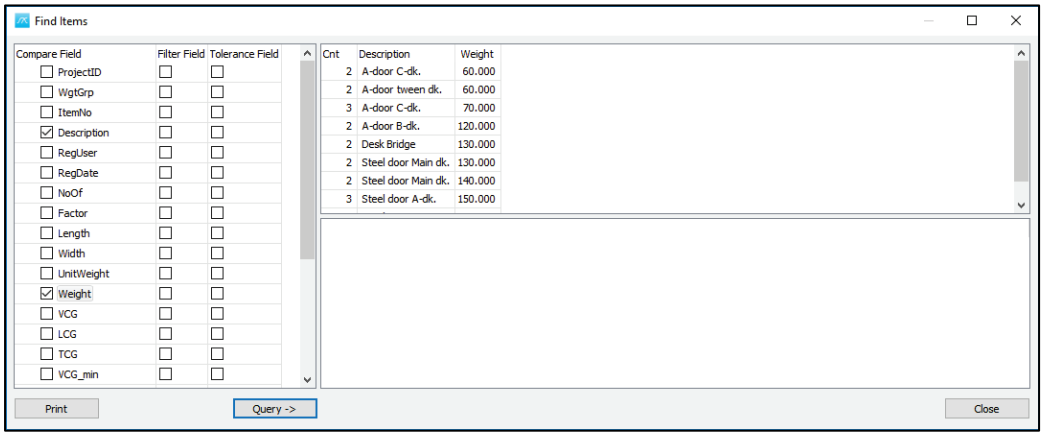
The combination of weight group and item number has to be unique in ShipWeight, so you are not allowed to enter any items with the same combination of weight group and item number. So, that is the first way to prevent duplicate items going into the database.

There can be errors that make duplicate items going into different items number and different weight groups, so you can use this tool to detect those.

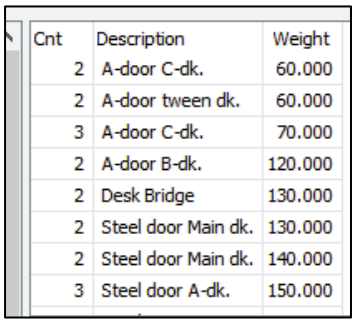
Firstly, the user checks the boxes next to the Compare Field. For example if we want to find any items in the database that share same Description and Weight:



Then click the Query button, the window is going to search through the database:

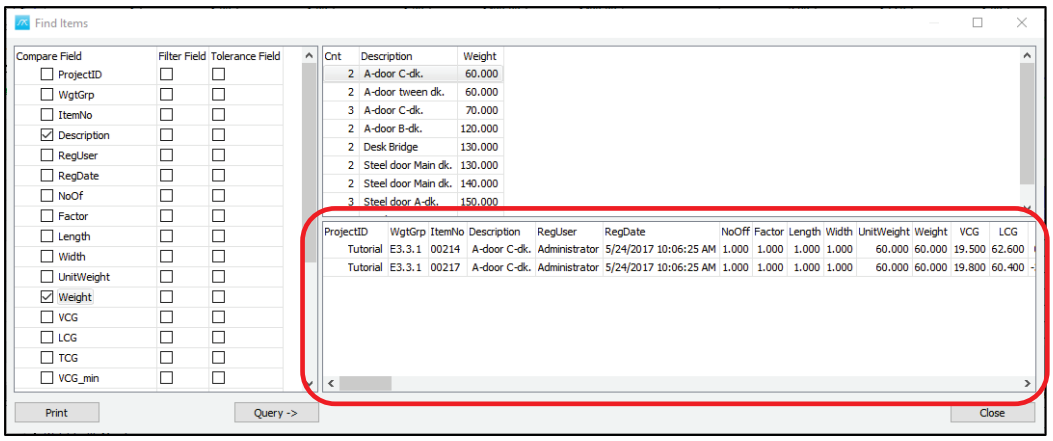


On the right side we can see several instances with items that share the same Description and Weight:



Cnt	Description	Weight
2	A-door C-dk.	60.000
2	A-door tween dk.	60.000
3	A-door C-dk.	70.000
2	A-door B-dk.	120.000
2	Desk Bridge	130.000
2	Steel door Main dk.	130.000
2	Steel door Main dk.	140.000
3	Steel door A-dk.	150.000

And if we click on the first one, then we get the details under:

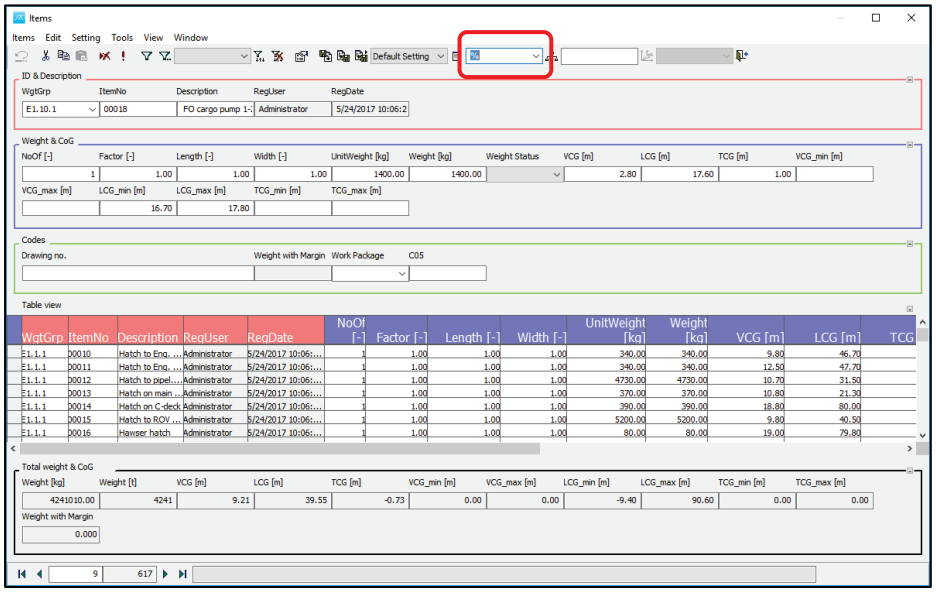


The detail shows that weight group E3.3.1 contains two items (00214 and 00217) with the same Description and Weight.

Step 2: Check for Extreme Values

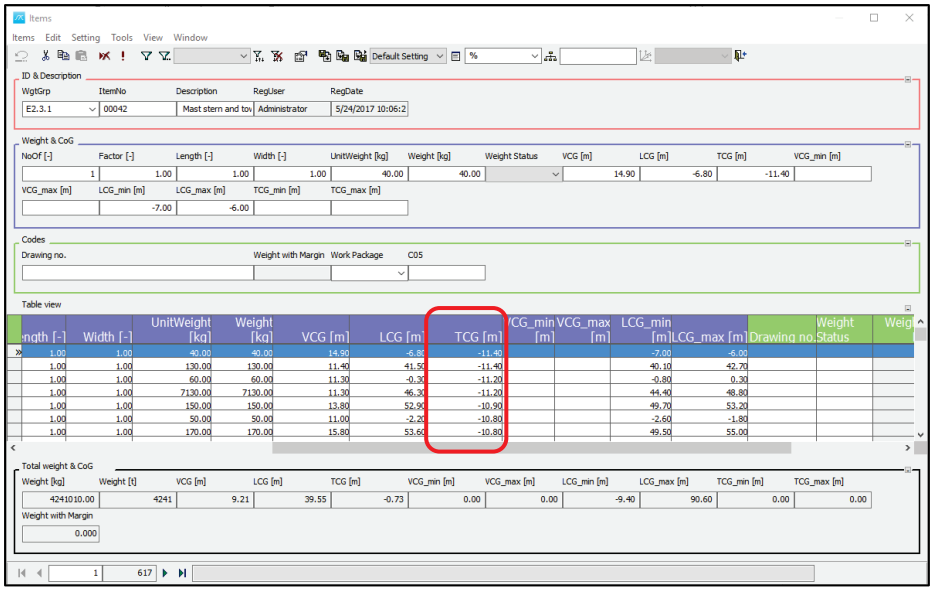
Another typical mistake is entering in wrong CG or Weight, by for example putting in mm instead of meters, or somehow else getting some extreme value.

The easiesnt way to check is by going into the Items window, make sure you are listing all items:

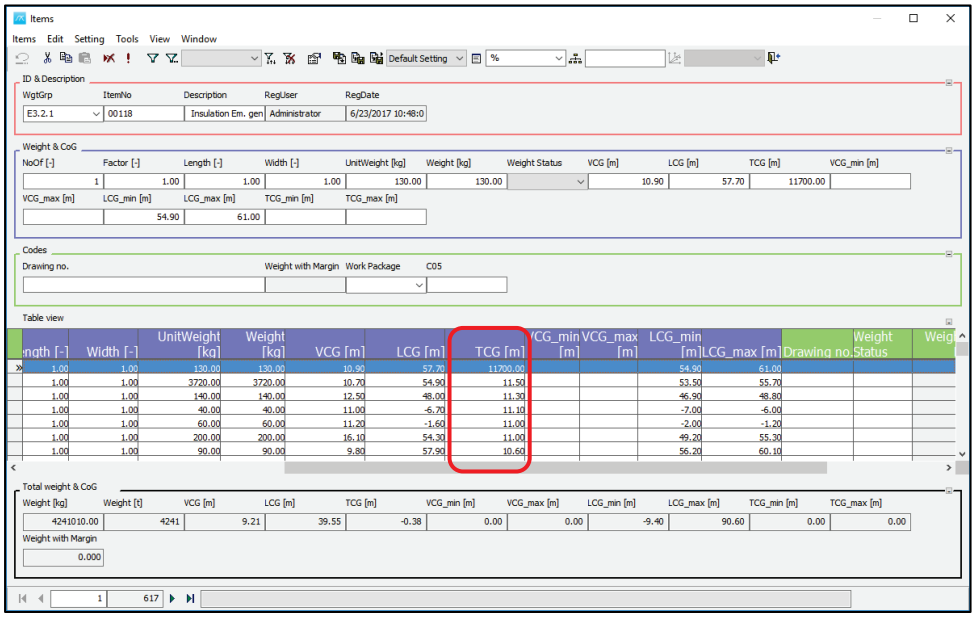


Then go to the Table View, and click on the headers to sort. For example, go to TCG column and click once on the header. It's going to start with the lowest TCG value

-11.4:



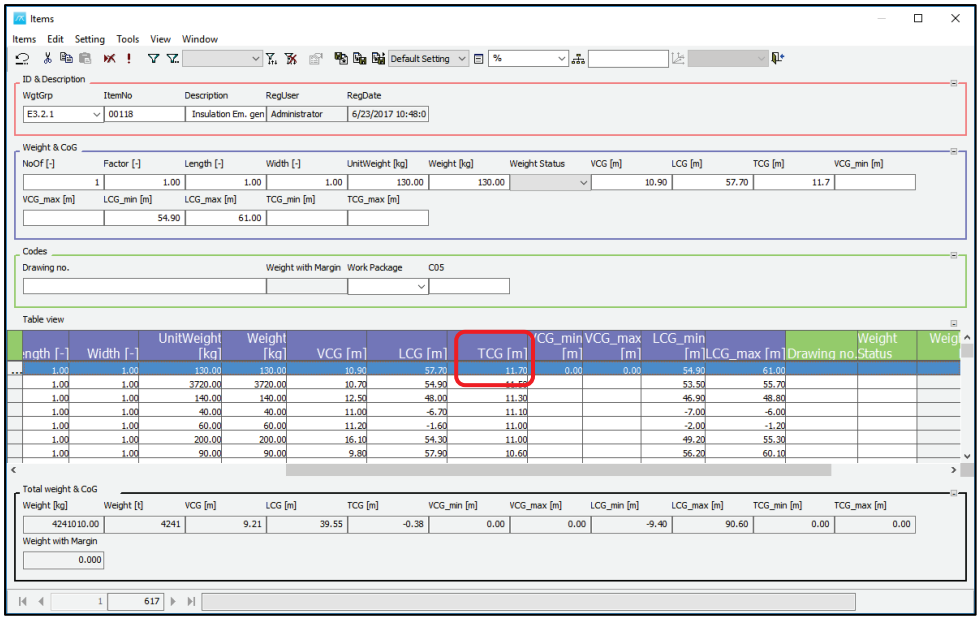
If we click again, the largest value will be the first one displayed:



So, here is a typical mistake, when someone entered millimeters instead of meters.

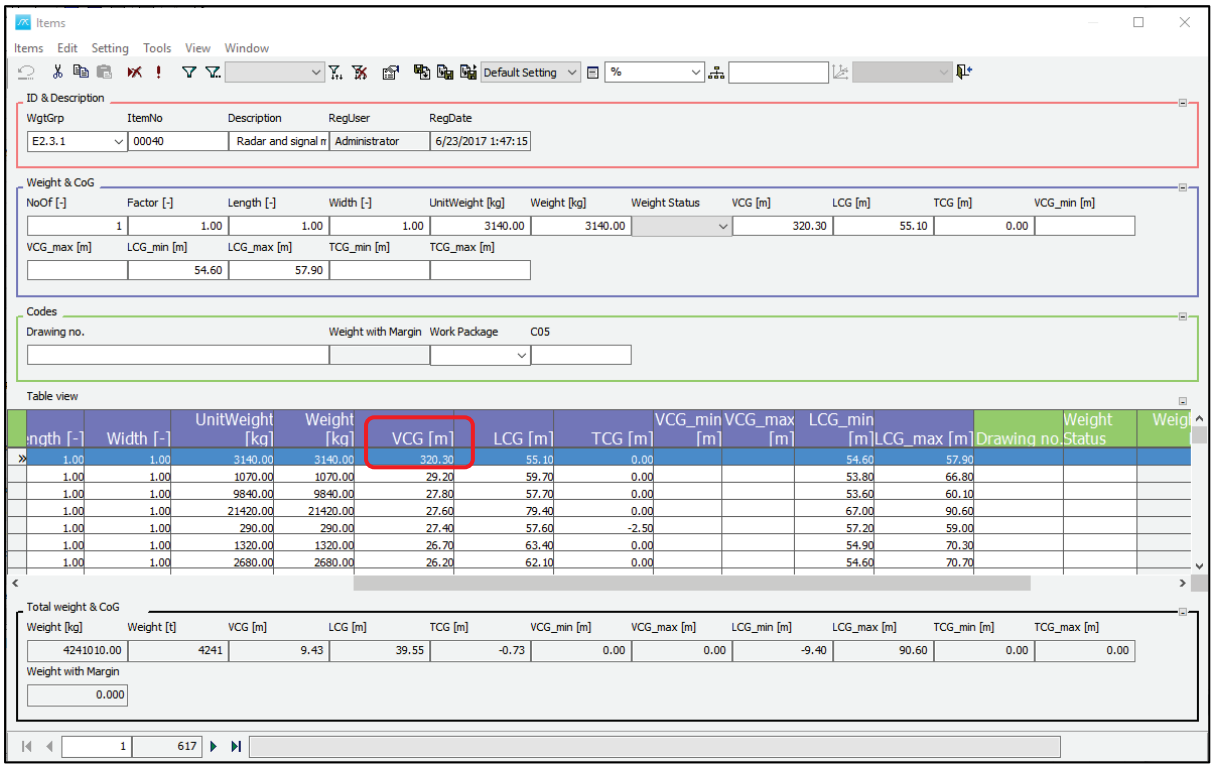
So it is very easy to find the extreme values, by clicking on the header.

Now we can just go and correct the value, by putting the decimal:



And we can also do the same procedure to check the LCG and VCG.

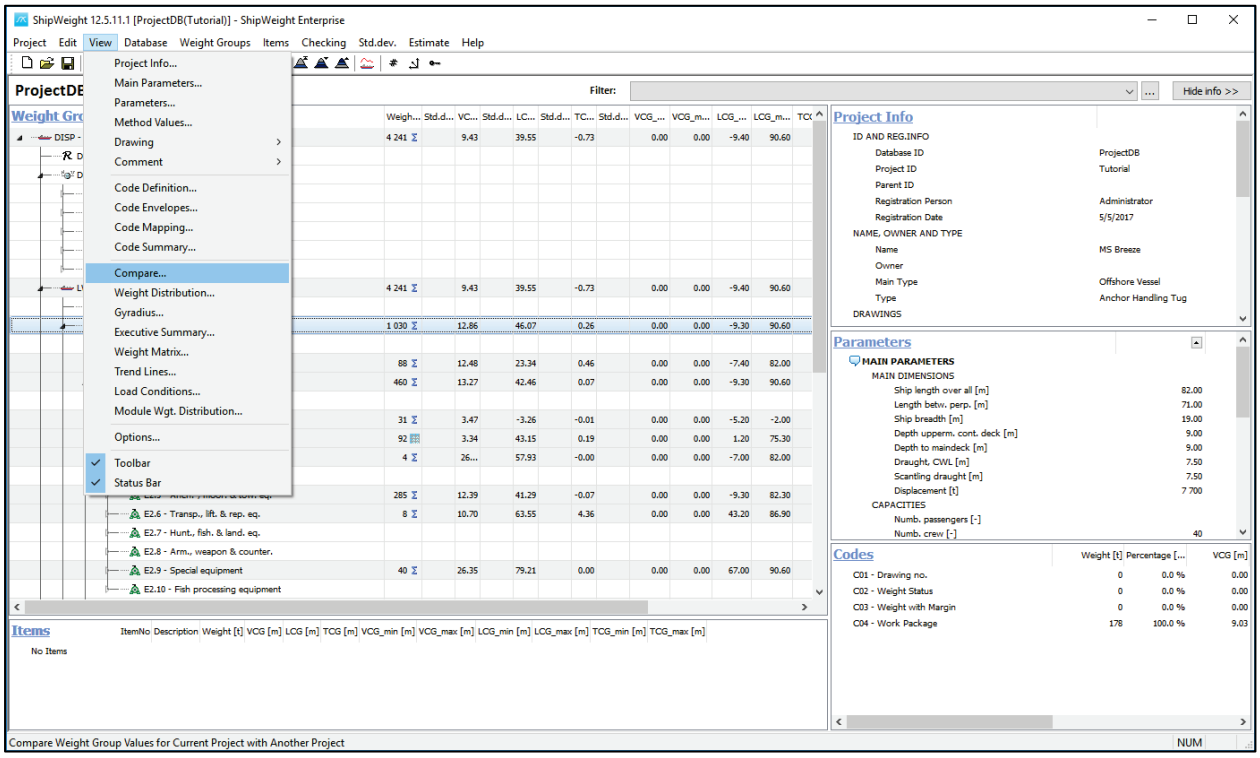
We can notice the VCG value is also not introduced correct, and we will show you another way to find the extreme values.



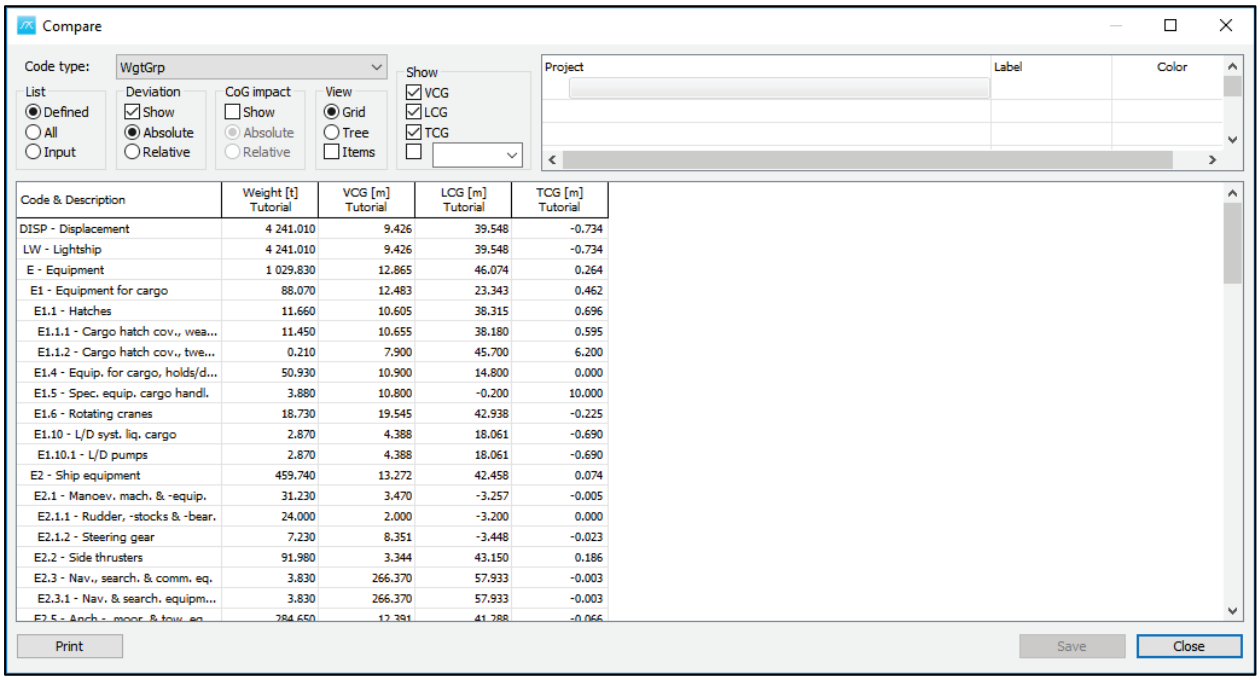
Another way to discover errors is to compare on the weight group level.

Close the items window.

Step 3: Compare Projects at Weight Group Level

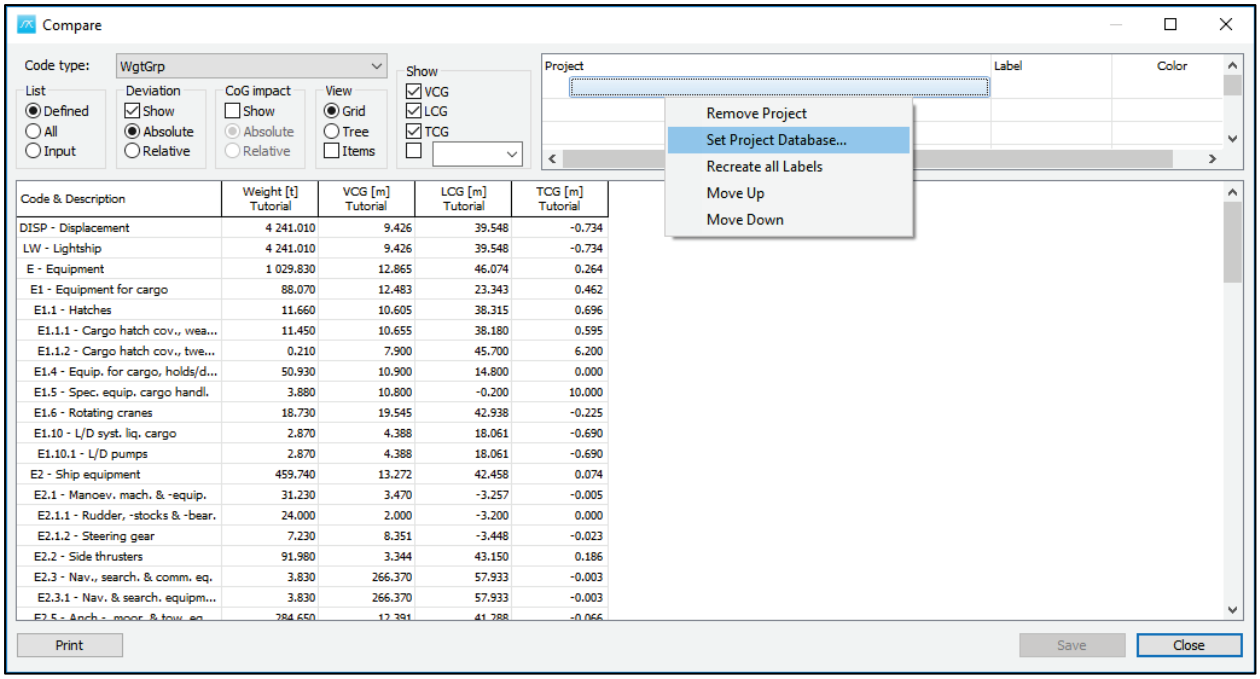


This brings up the Compare window:

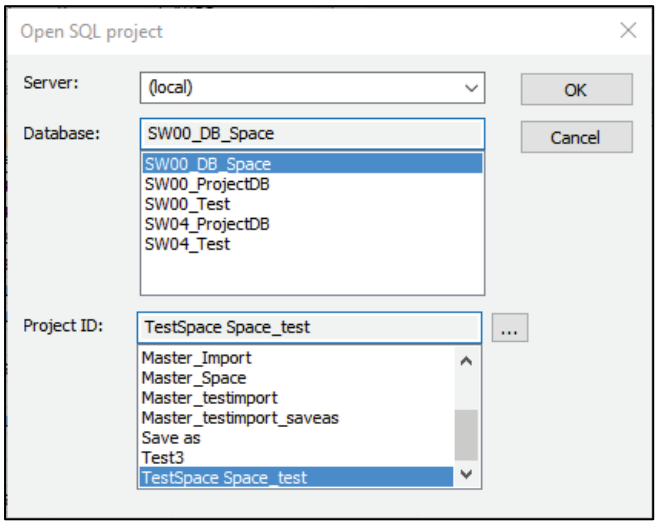


Which will show the Weight, VCG, LCG and TCG. It is sorted by hierarchy, and you can add previous revisions or previous projects in the upper right area, and compare values on the weight group level.

To add more projects, right click in the Project area and select **Set Project Database…**:

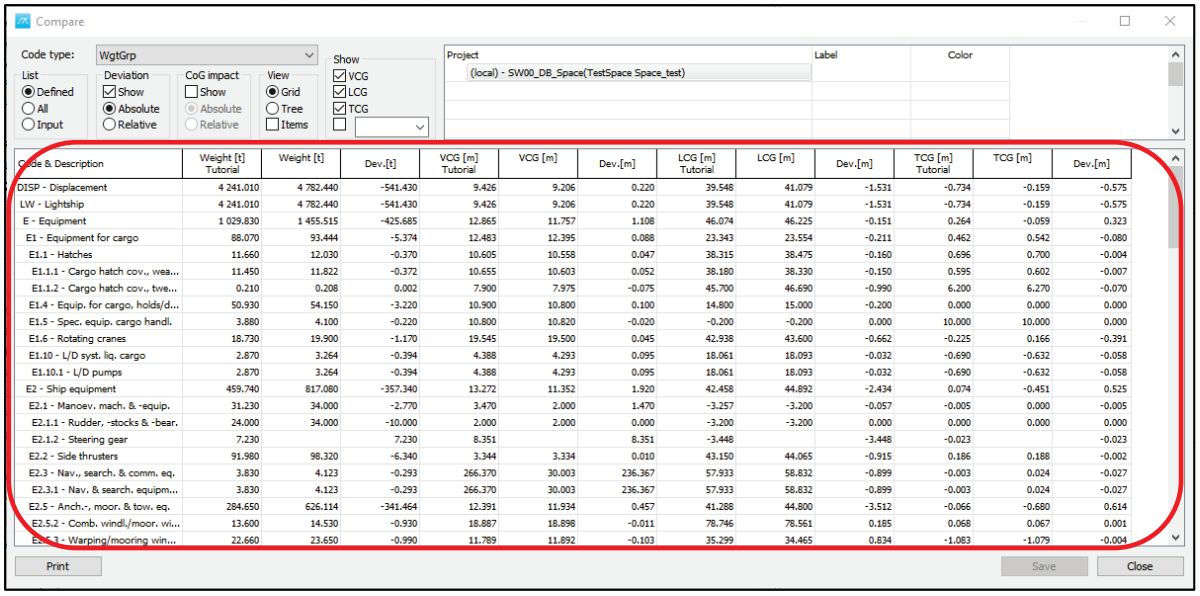


The Open SQL project window will open. For example, SW00_DB_Space database and TestSpace Space_test project ID:



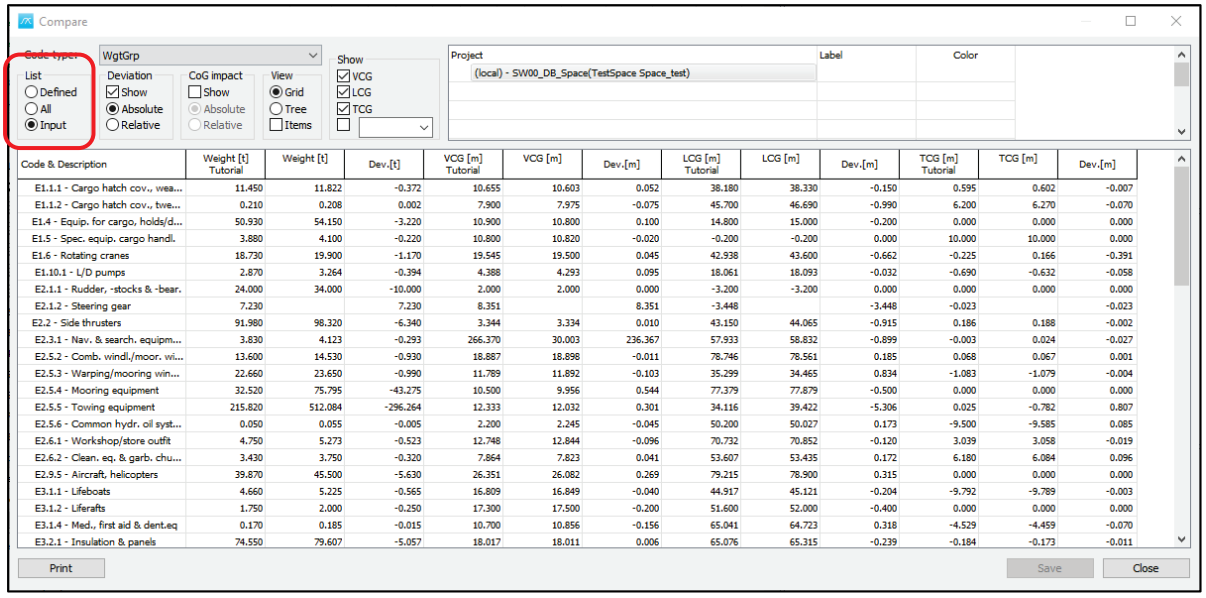
Then click OK.

Now it will show the values for the weights and center of gravity for the current project compared with the weights and center of gravity values for the selected project:



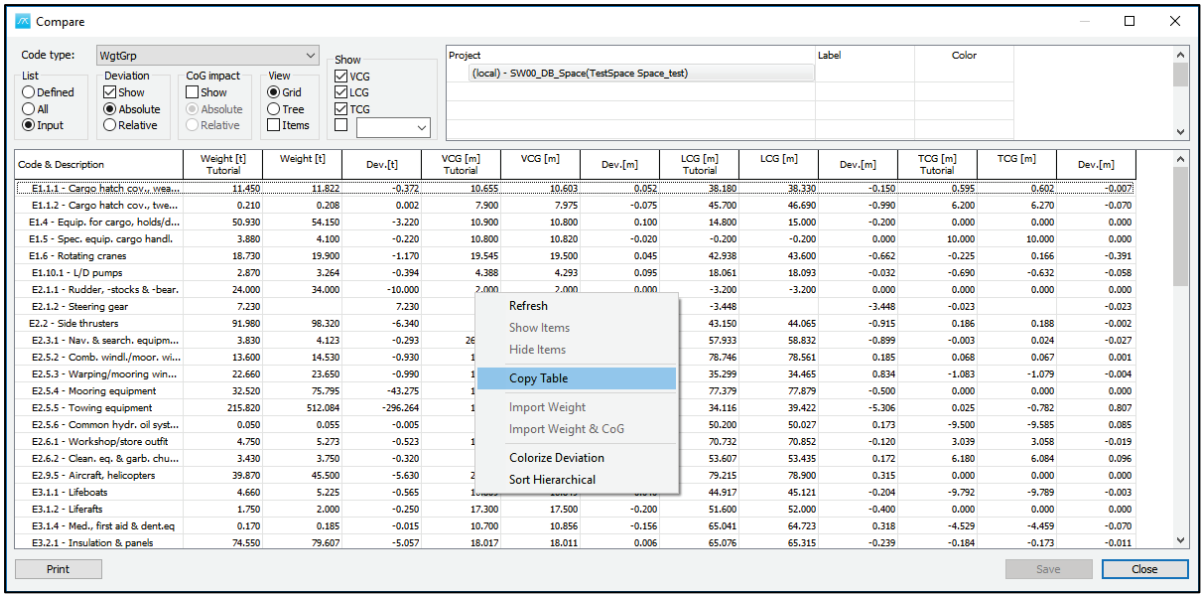
By default is sorted by Absolute deviation, and obviously if you list all the hierarchy, then the agregated weight groups to top weight groups will come up on the top of the column.

To avoid this, go to List and select Input:



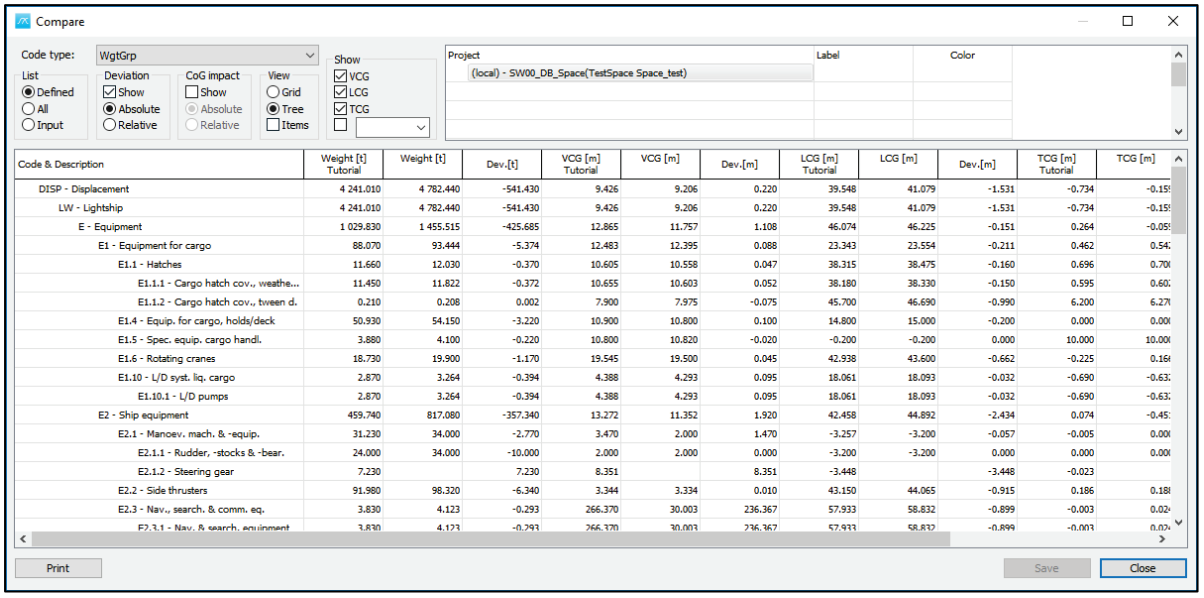
We can also sort by Relative deviation, to show which group has the largest relative deviation.

All the information can be copied with **Copy Table** option and paste it to excel:



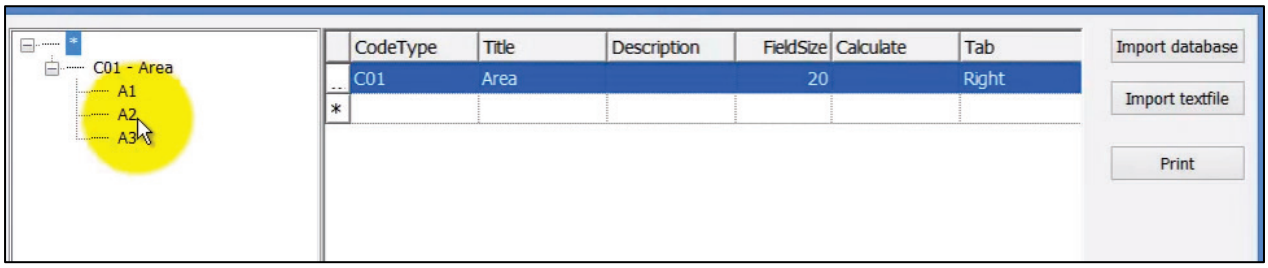
We can also print the table to make the report, by using the Print option.

You can also shift from the Grid View to the Tree view, which will show you the weight groups in a hierarchy tree.

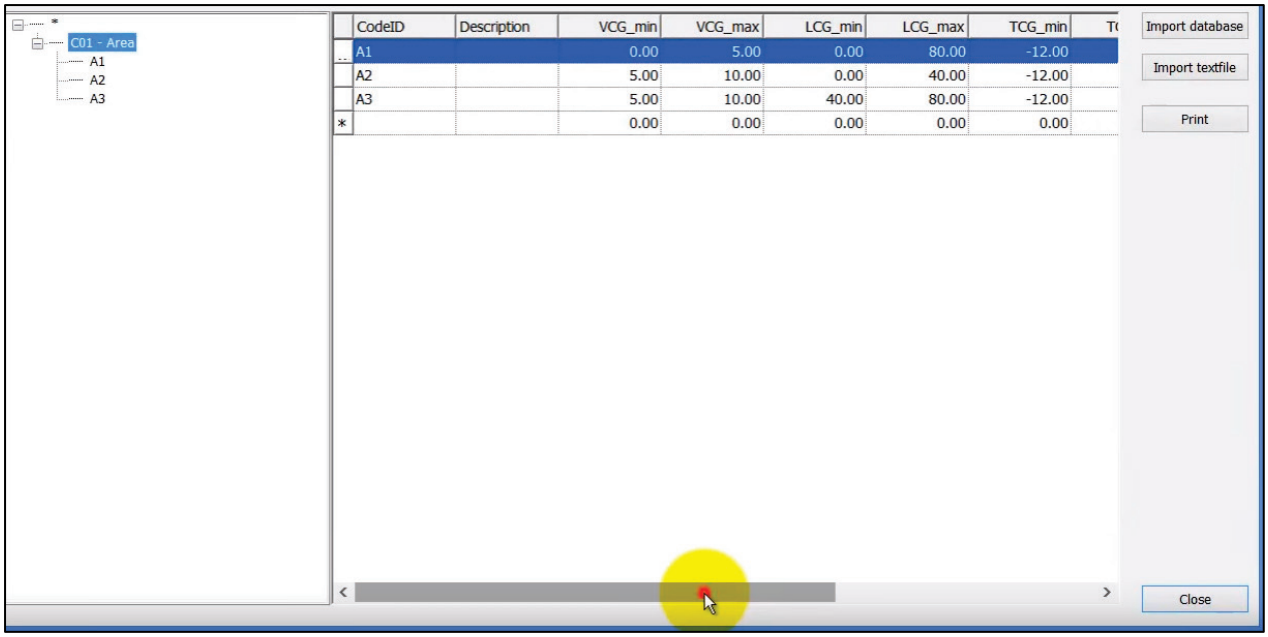


Step 4: Run a Code Definition Envelope Check

If you have defined a custom code, for example for area:

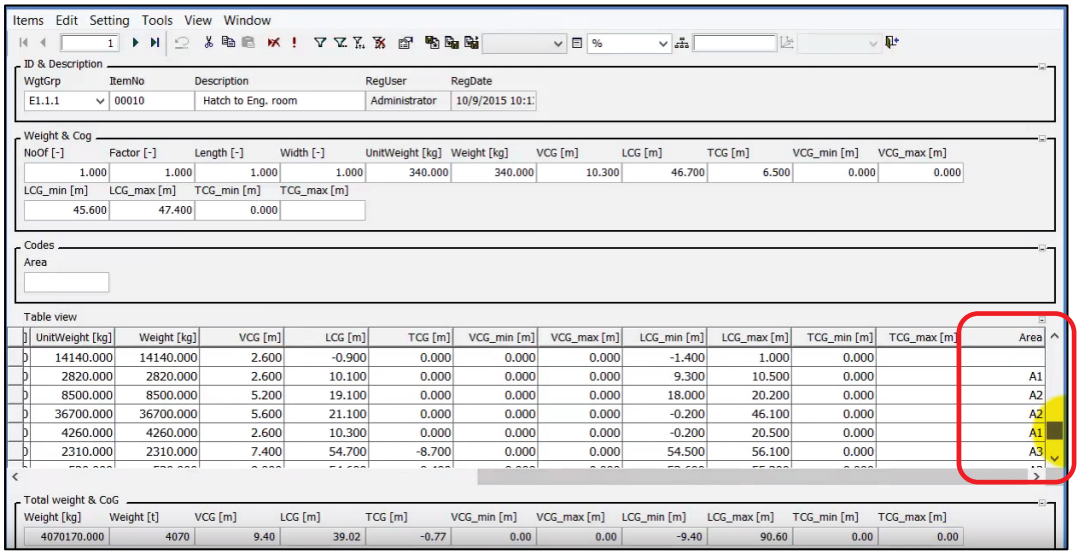


And this custom code C05 has sub areas A1, A2 and A3 (these areas have been given box limits):

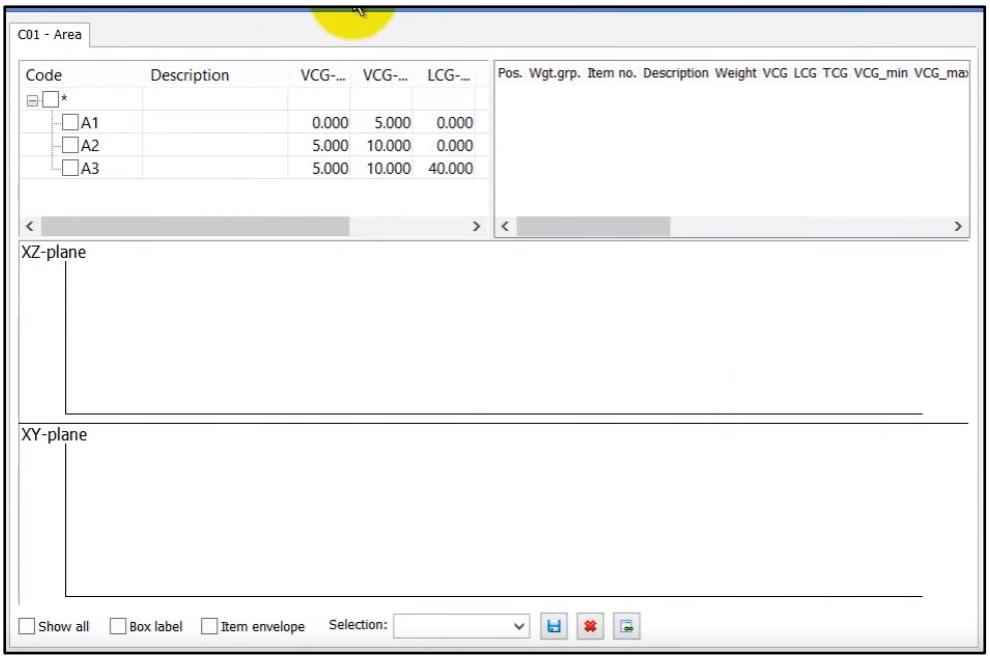


Press Close.

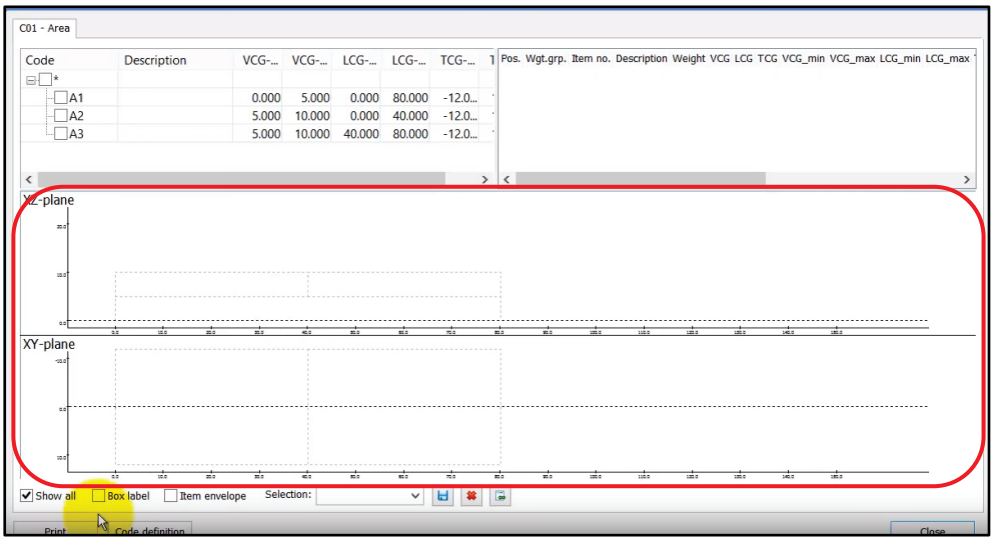
Now in the items window, Items have been tagged to various areas:



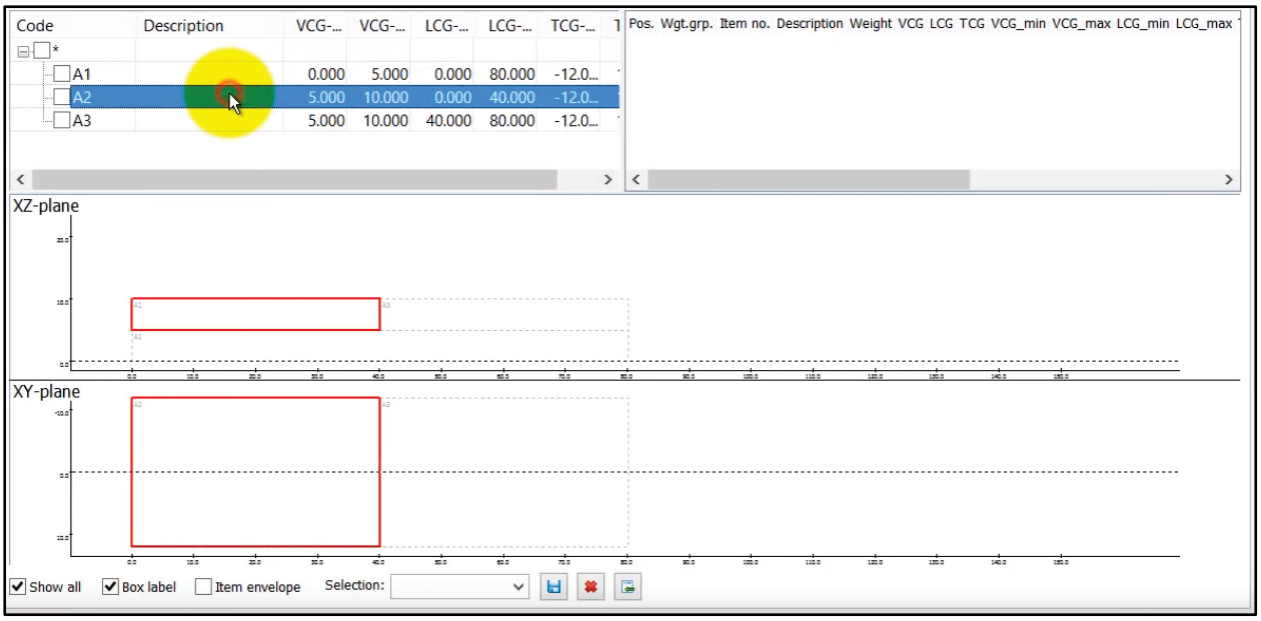
And we can check the correctness of these by going to menu View and Code Envelopes. This brings up the Code envelopes window:



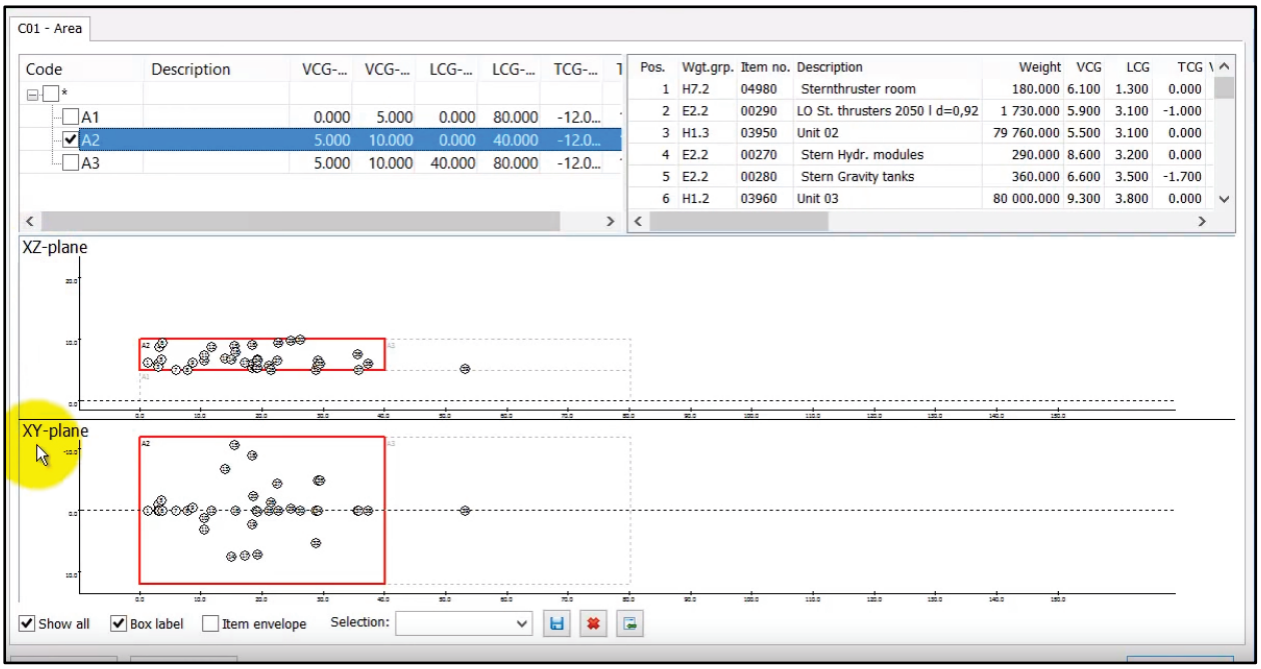
This will show the custom code. If we select **Show all** option, the boundaries of the boxes will be displayed.



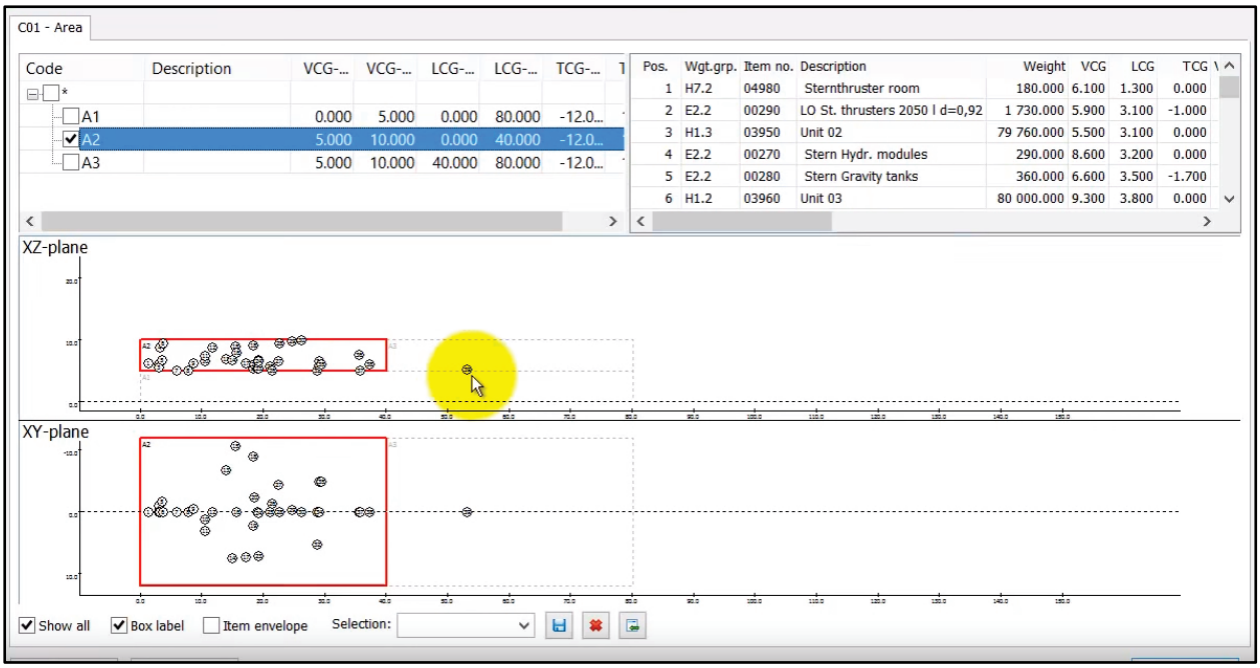
Now check the Box label option and by clicking in A1, A2 or A3 row, various boxes will be highlighed:



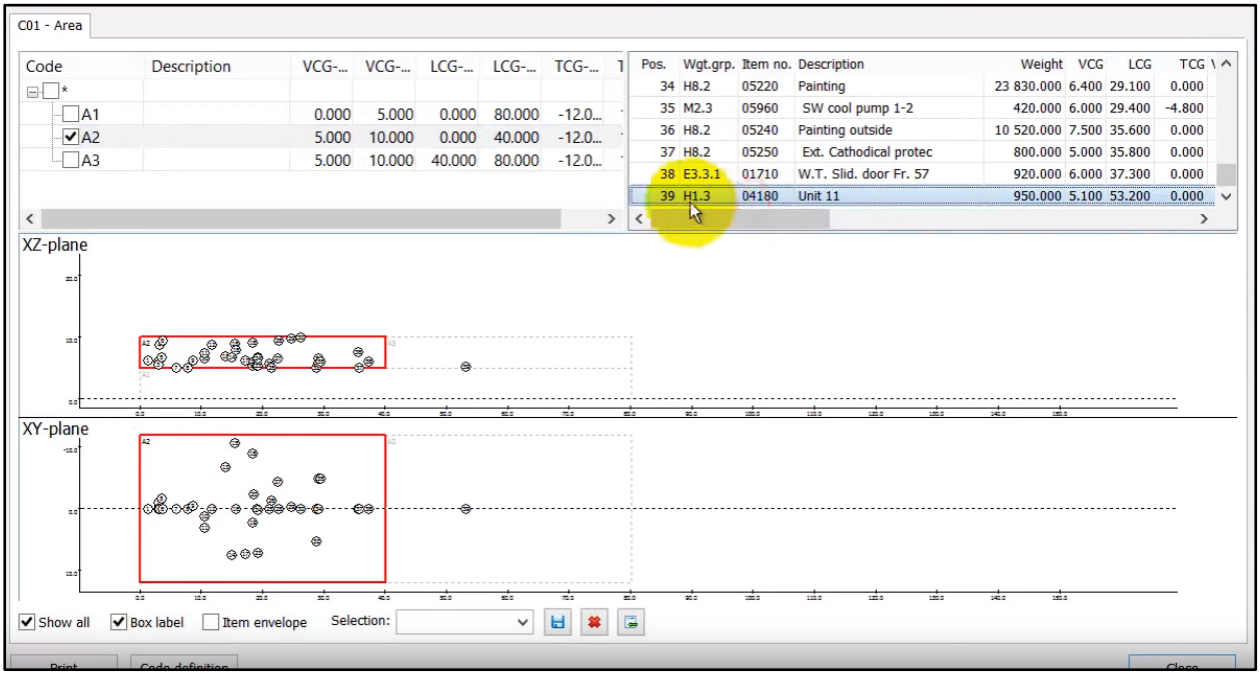
If we highlight A2 and also check the box in front of A2, all items tagged to A2 will be printed in the XZ-plane and XY-plane:



We see if all of the items are inside the box. We see one item outside the box:



The item number is 39, so we can scrolll down to Pos. 39 and find item 39:



And obviously this is an error, so either item 39 has wrong CoG value or it has been tagged to the wrong area code.

You can also print out the report for this using Print command.

Step 4: Check the Report Setup Window

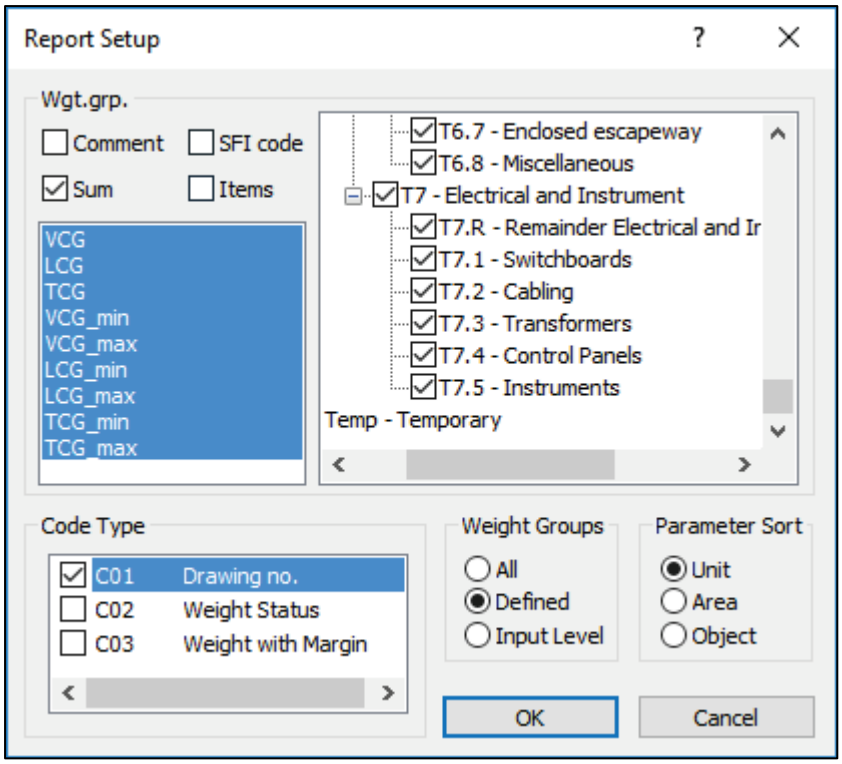
From the ***Project*** menu, select ***Report setup***. Select:

Weight Groups ***Defined***

Parameter sort ***Unit***

Wgt.grp. ***Sum***

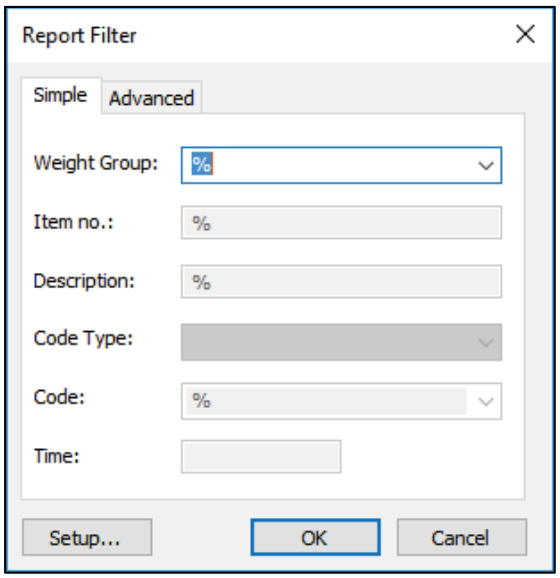
Code type ***C01 – Drawing no***



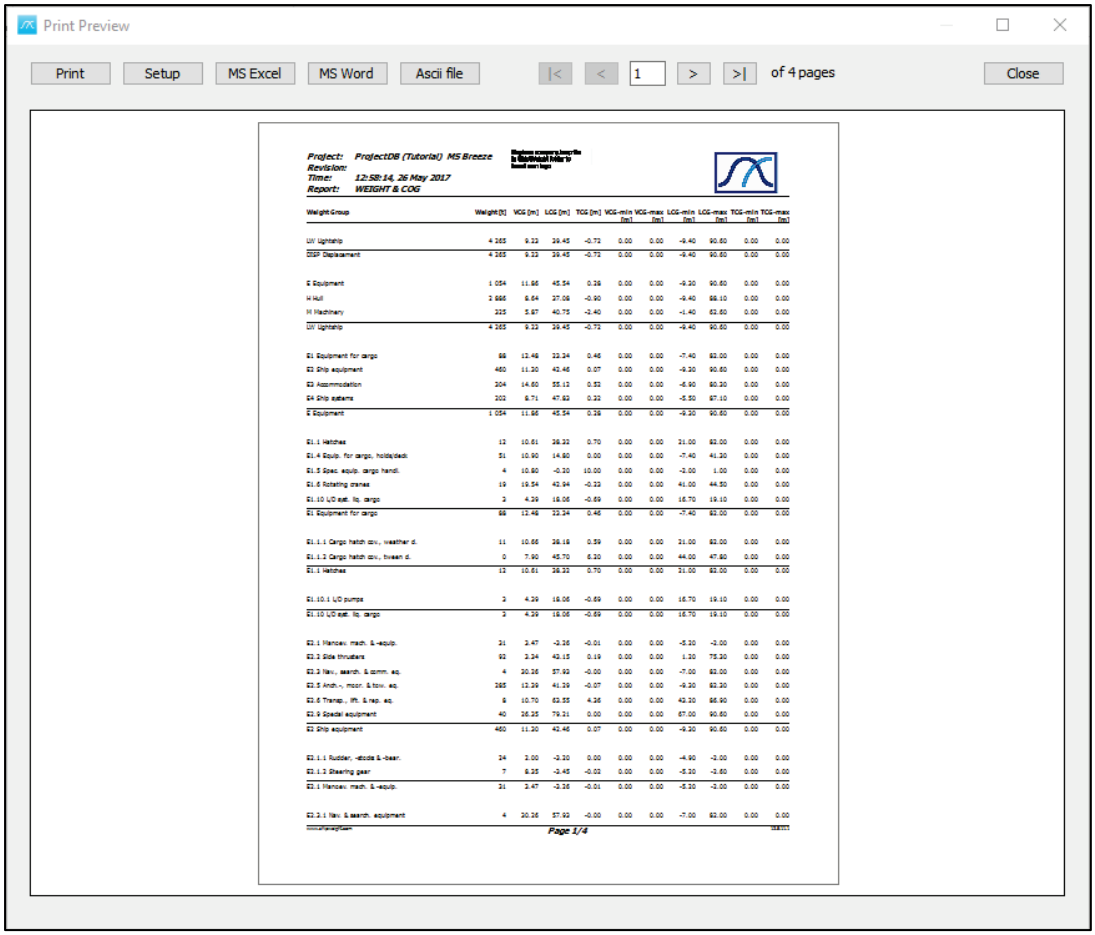
Click ***OK*** to close the window.

Step 5: Run a Standard Report

Select ***Reports*** and ***4 Weight and CoG wgt.grp. summary*** on the ***Project*** menu. The following window will open – just press ***OK***

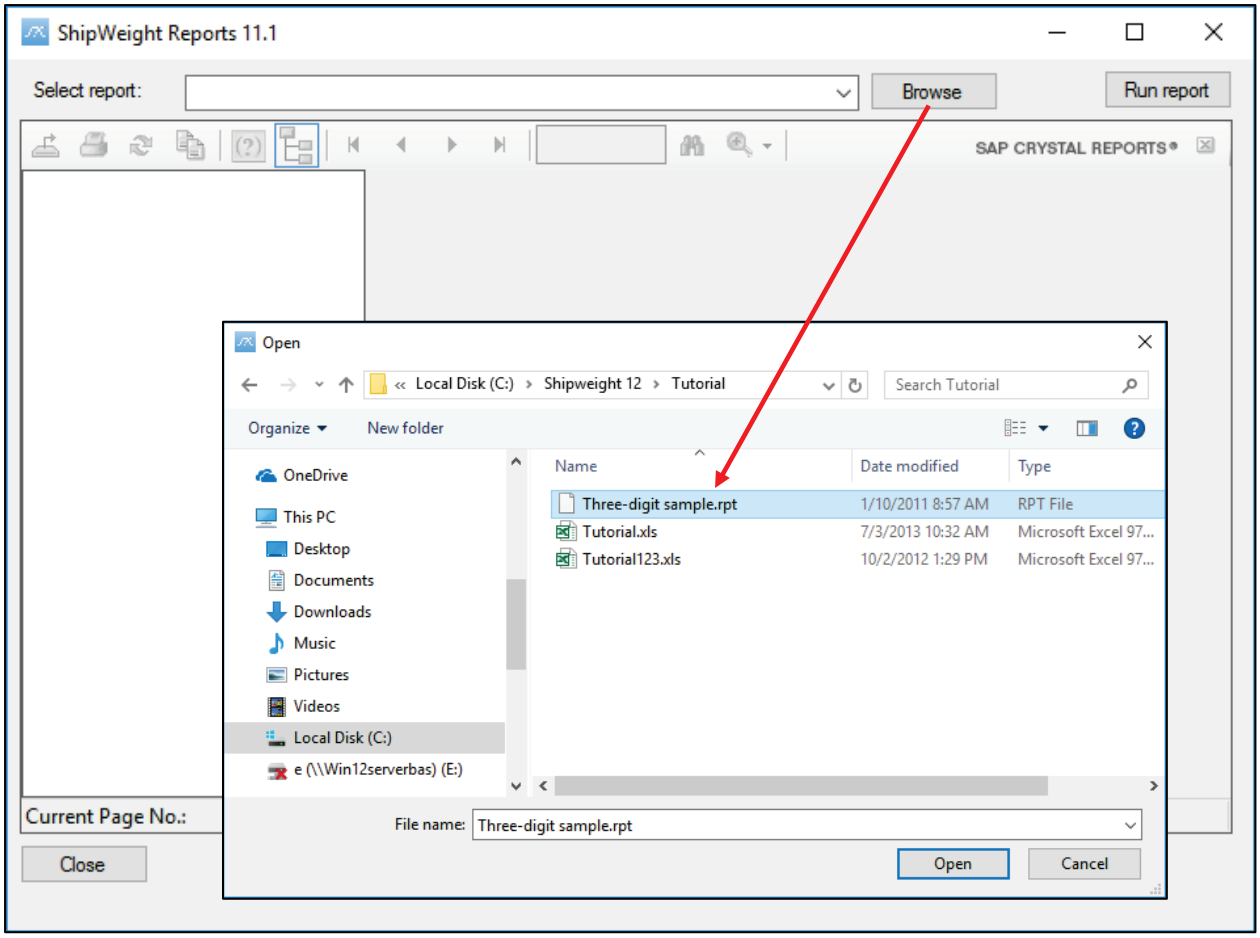


The report will then be opened in the Print Preview window. In the Print Preview window, press the MS Word button to export the report. Close the Preview window.



Step 6: Run a Crystal Report

Start ShipWeight Report by selecting ***Crystal Reports***… on the ***Project*** menu of ShipWeight.

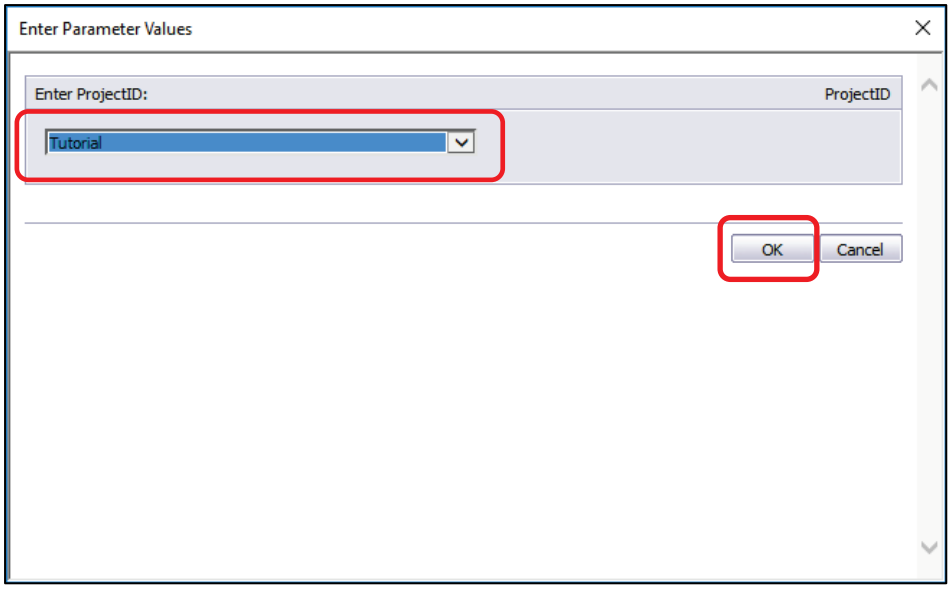


The first thing to do is to select the report you want to run. In this example we will use the report Three-digit sample.rpt. Locate the report file on your hard drive by pressing the Browse button to open the Open window window.

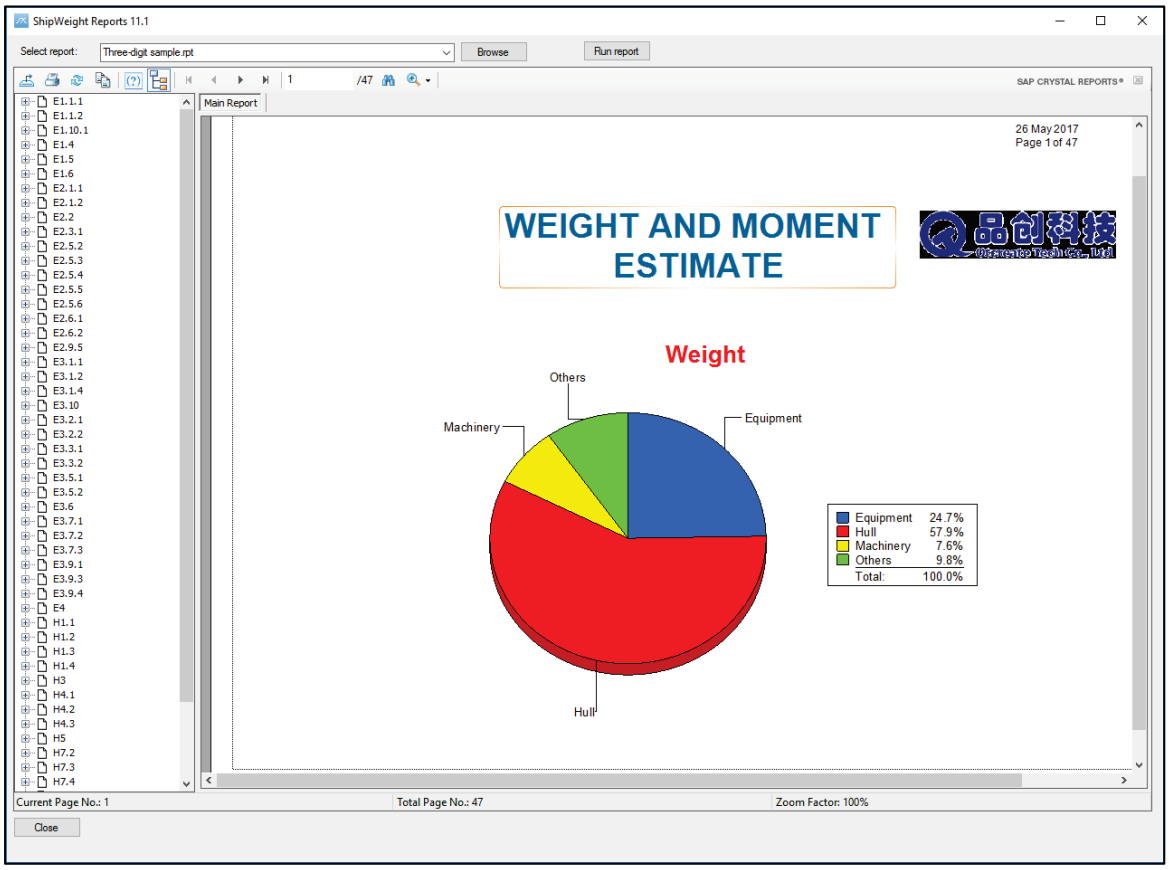
When you have located and selected the file Three-digit sample.rpt, press open. Now the file name will show in the Select report field.

Next, press the 'Run report' button.

In the "Enter project ID" window that now pops up, select "Tutorial" from the dropdown list and click "OK".



The report should now be displayed after a few seconds.



Now, use the toolbar or the group tree to navigate through the report. Also try exporting the report to portable document format (PDF), Word or Excel.

Playground Area

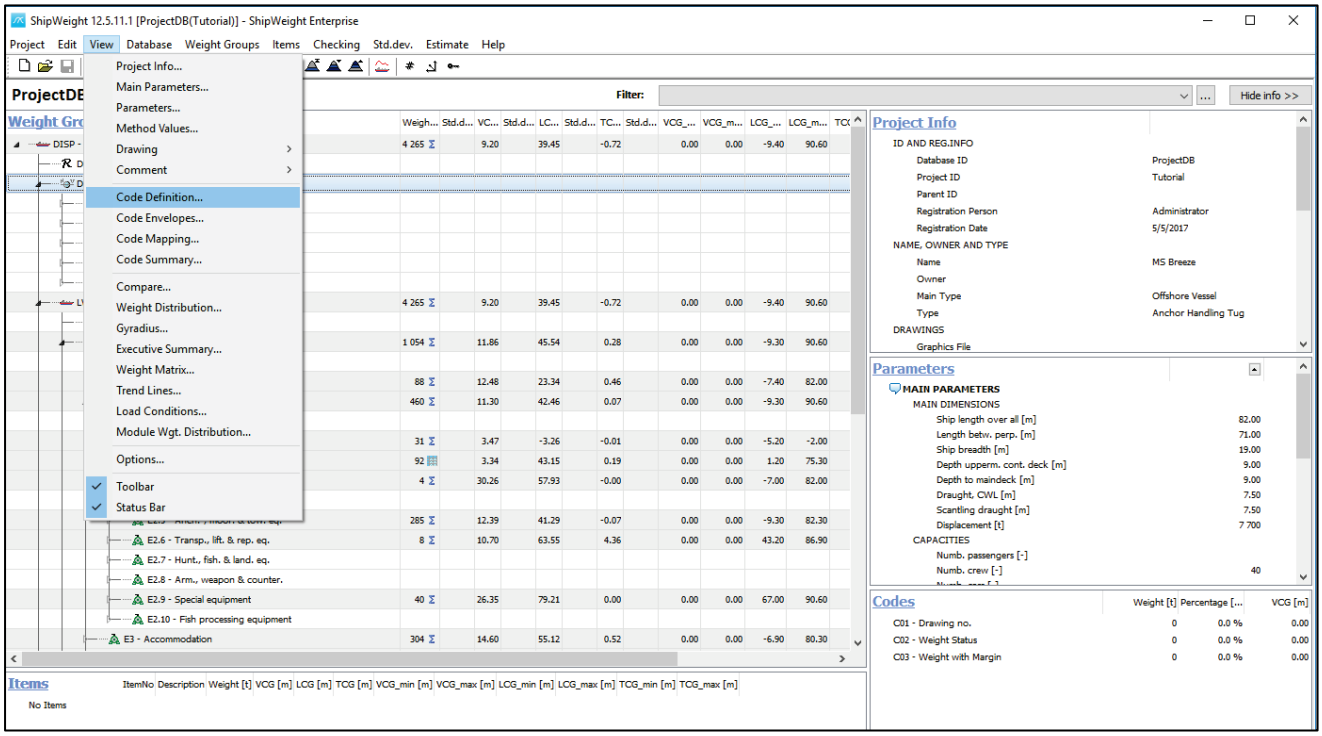
This section will show how to

- Set up a Playground Area (sandbox environment)
- Use Playground Area as a net change and approval tool

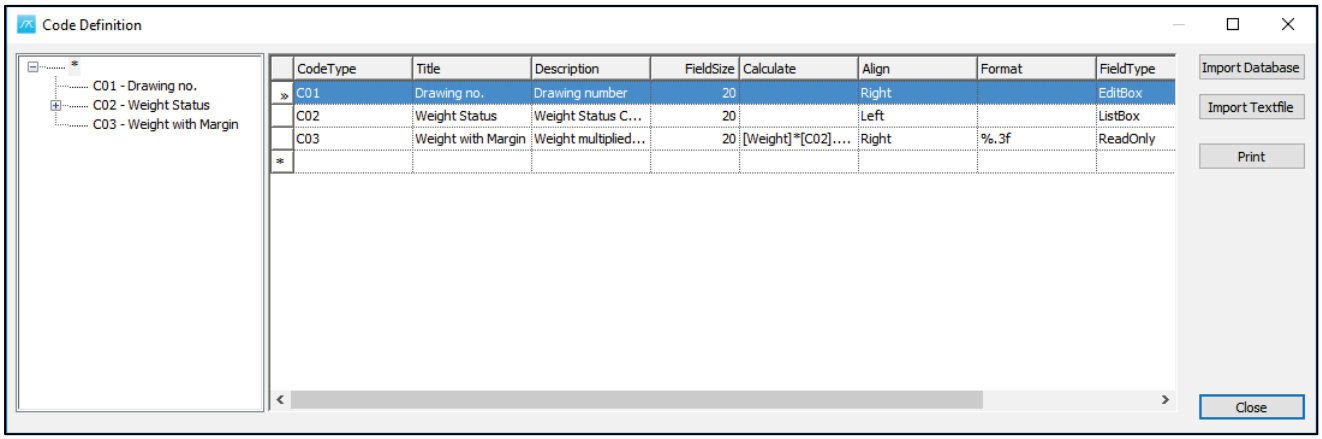
Step1: Create (or select existing) Code for Worksets (or use Weight Groups)

To set up a successful playground area first we have to select a custom code that will work as our work packages or that will group the items that we need to check in and out of the playground area.

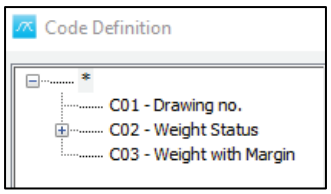
Go to the **View** menu and select **Code Definition…**



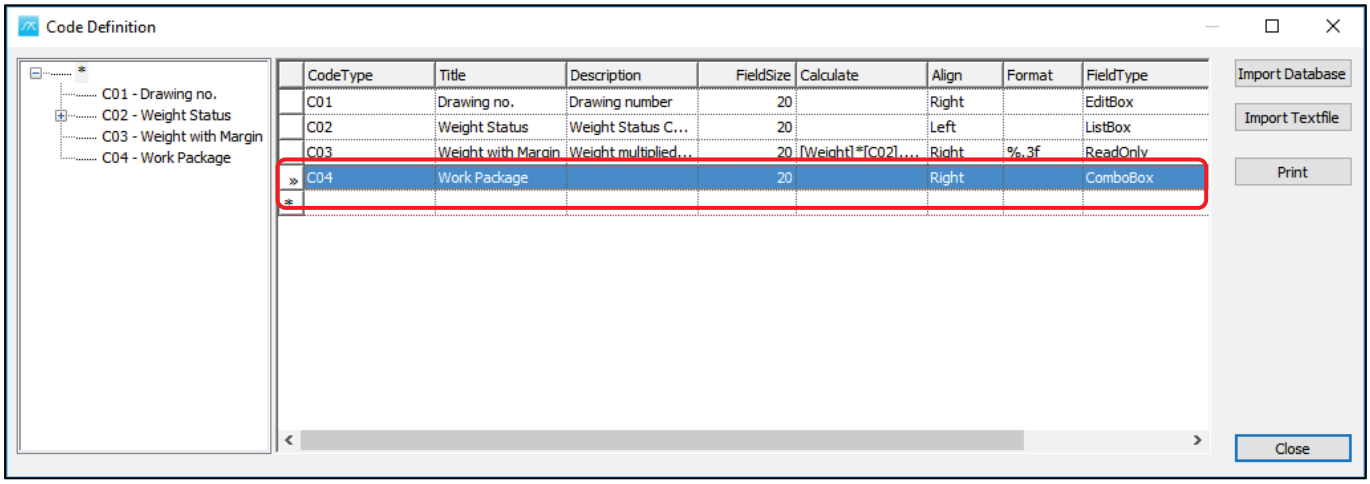
The Code Definition window will open:



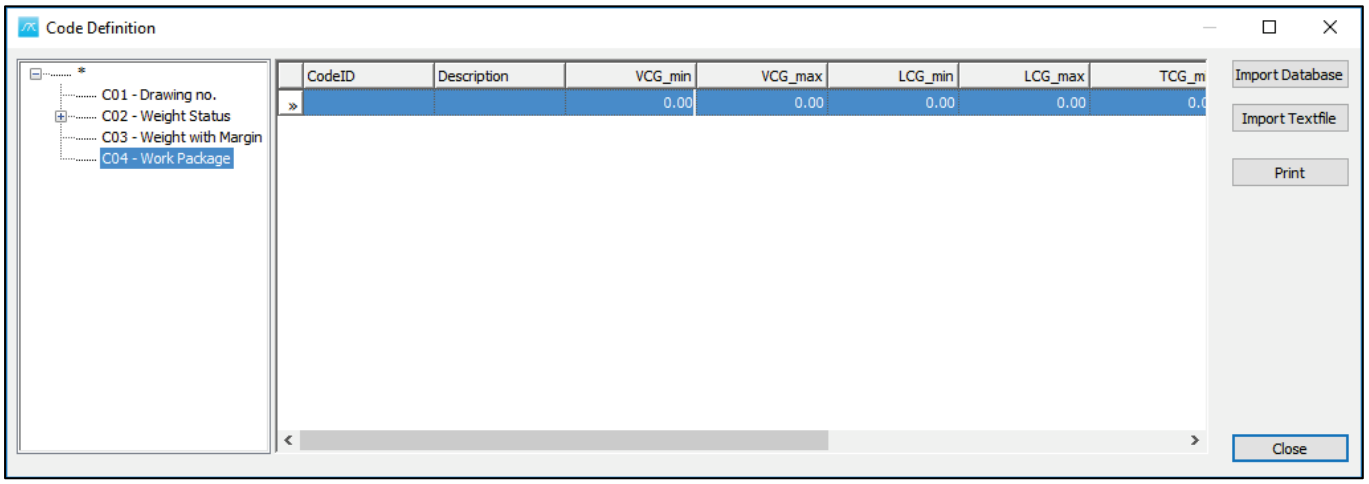
Within the code definition window we could have selected any of the existing codes to be used as our playground area codes:



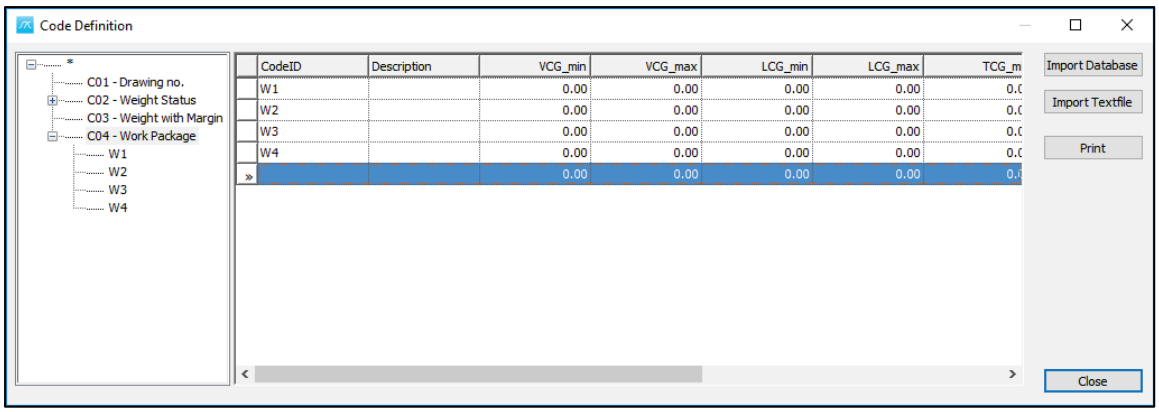
or we can define our own code, specific playground area code:



Now we need to add few subcodes for the work package so that we can use to group items to check them in and out of the playground area. Select the new code C04 – Work Package:



And add the following subcodes:



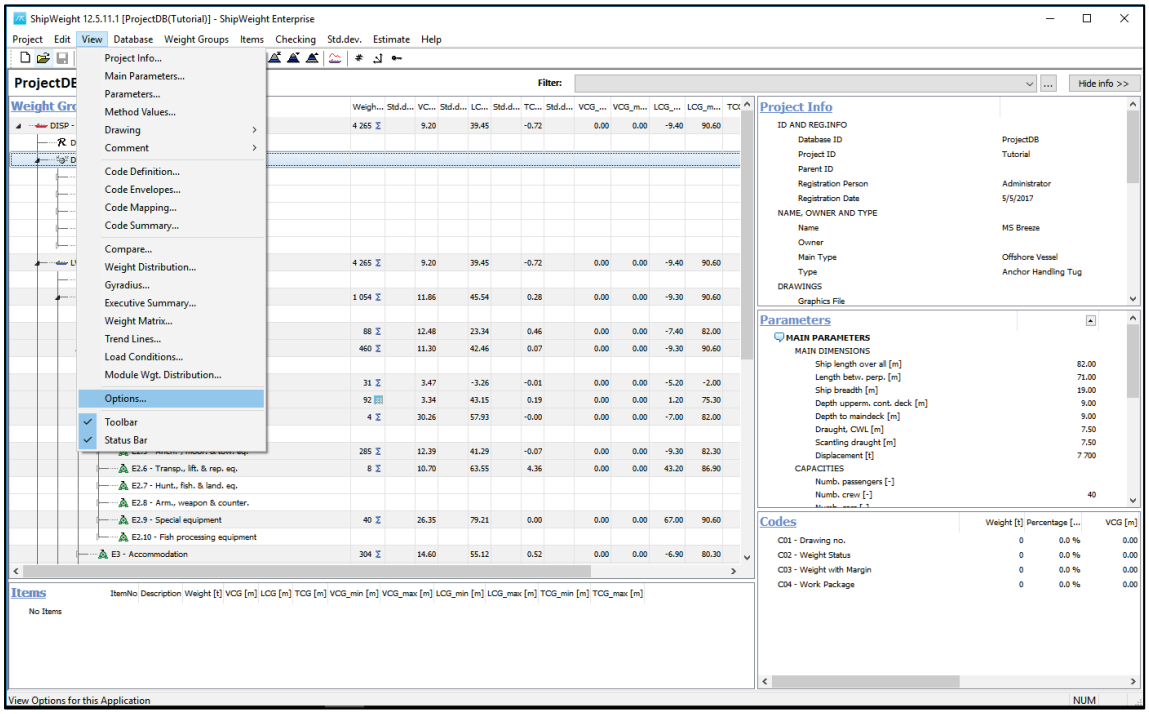
So, basically we have the code to groups the items that need to be checked in and out of the playground area.

In principle, any code may work as a workset code (drawing number, CAD package, department number, etc…)

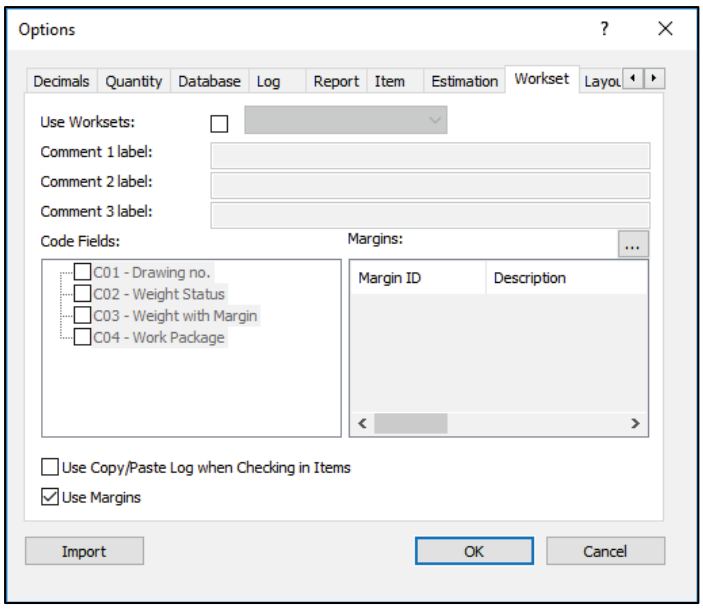
Now Close the Code Definition window.

Step 2: Enable the "Playground" in the Option window

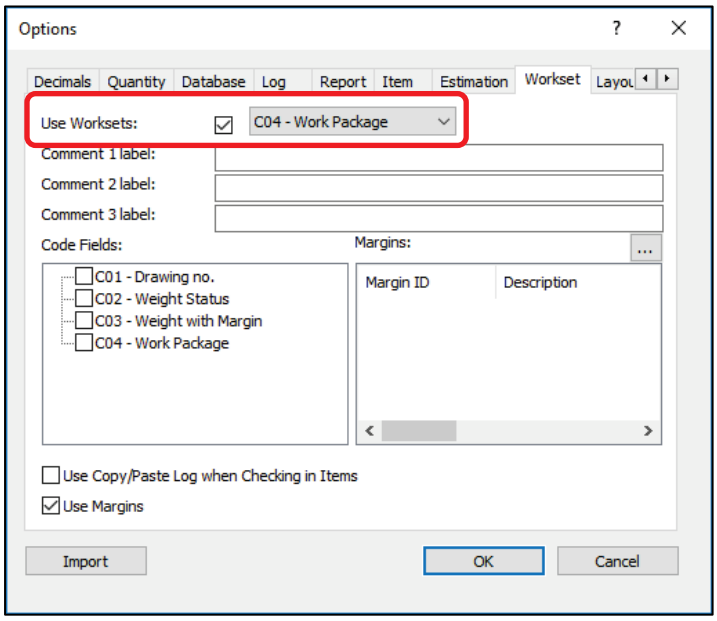
Go to the **View** menu and select **Options…**



The Options window will pop up:



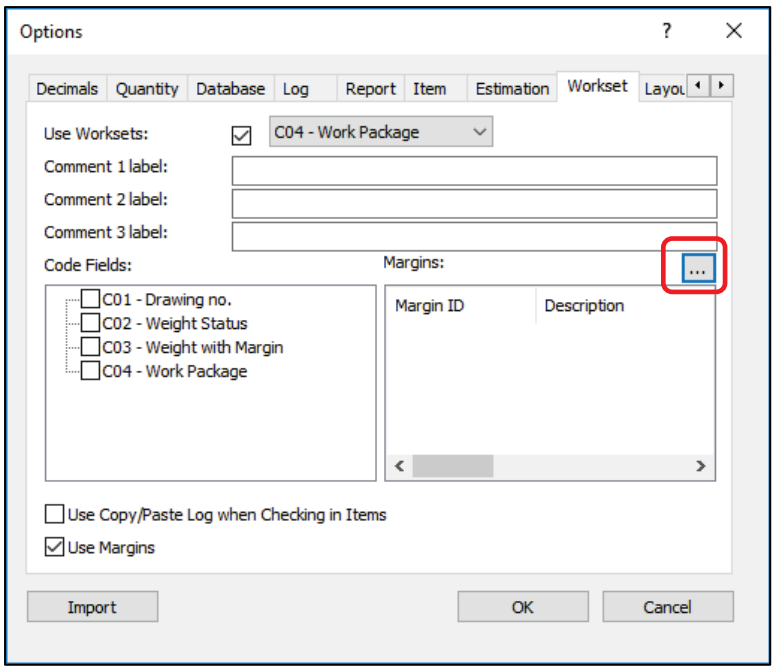
Now, enable the workset, by checking the **Use Worksets** box, and select C04 – Work Package code:



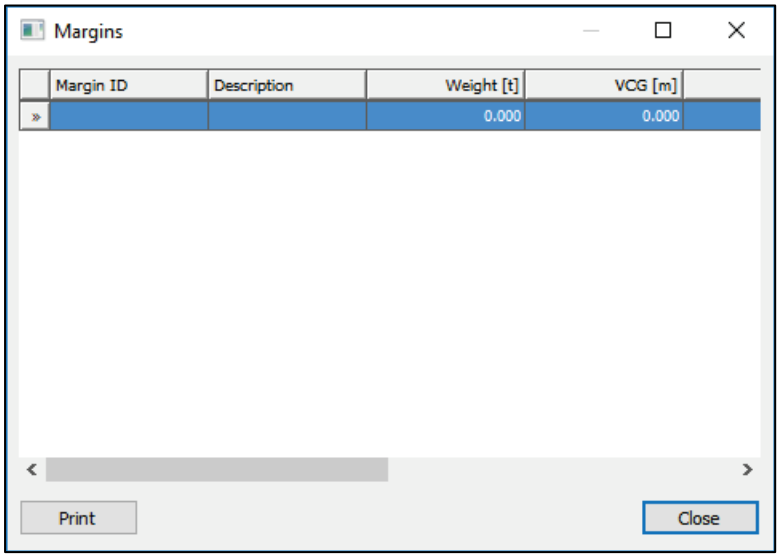
Below there are some Comment Labels which can be freely edited.

Step 3: Define Margins

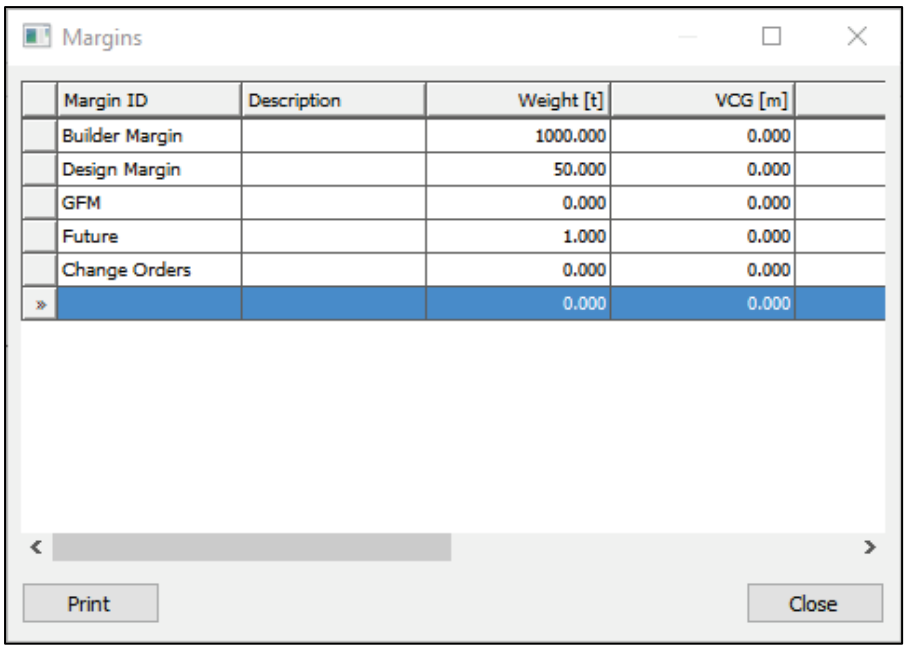
Finally, in the Options window are the margins, in the lower right corner. These margins can be set and defined in the Margins window. To open the Margins window, press the browse button:



The margins window pops up:

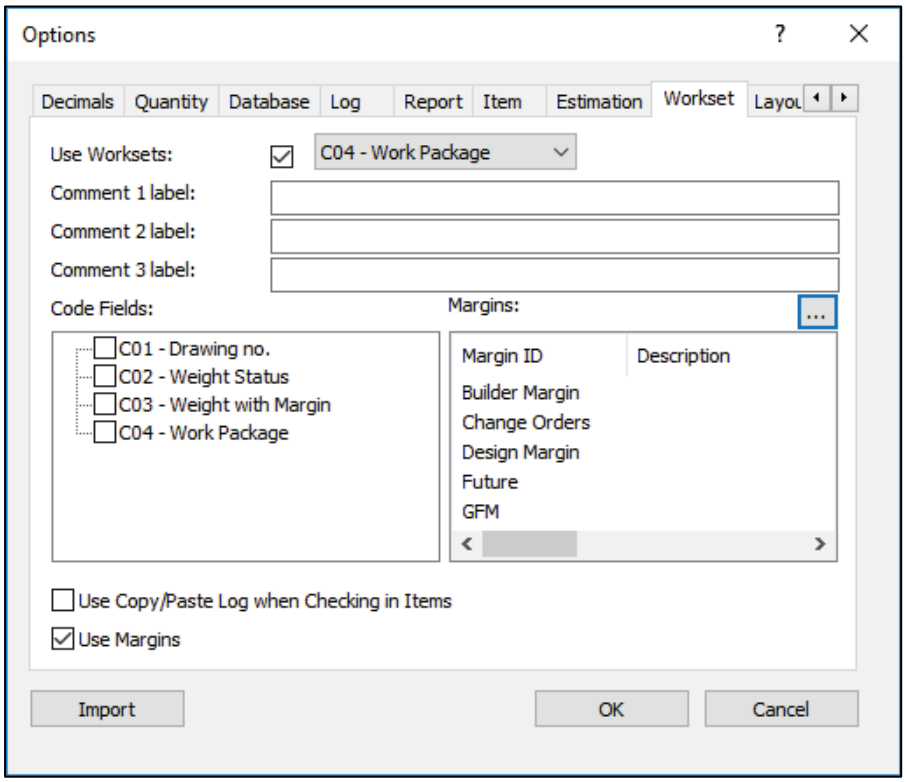


Define the following margins:



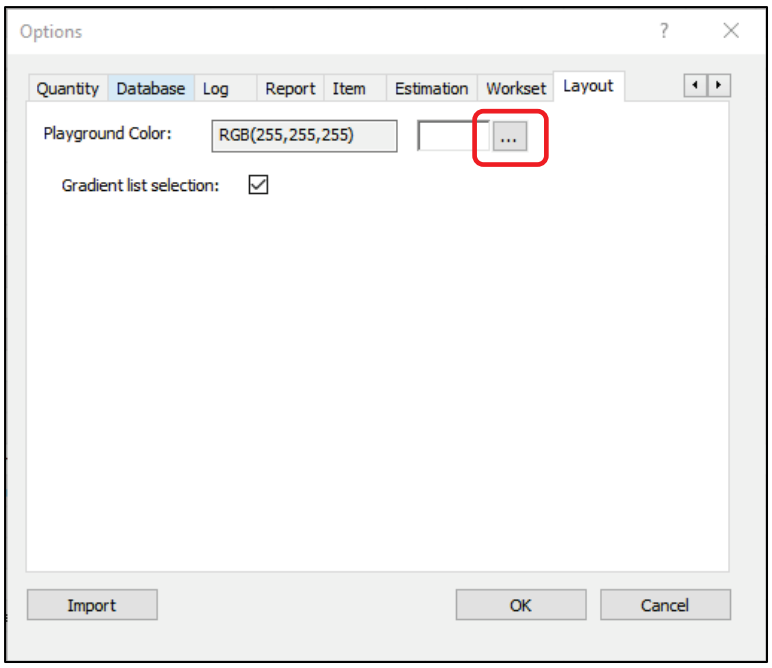
Click Close.

So, now we have defined the Workset to start working with the Playground:

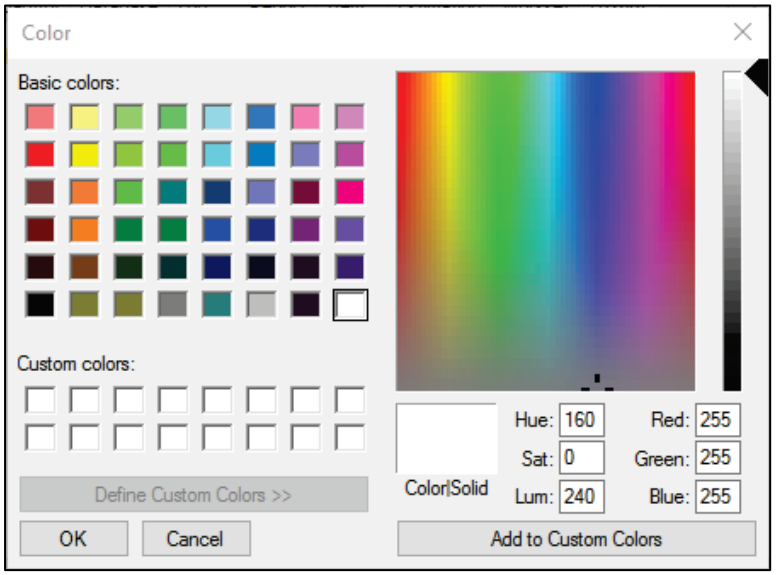


Step 4: Choose a background color for the Playground item window!

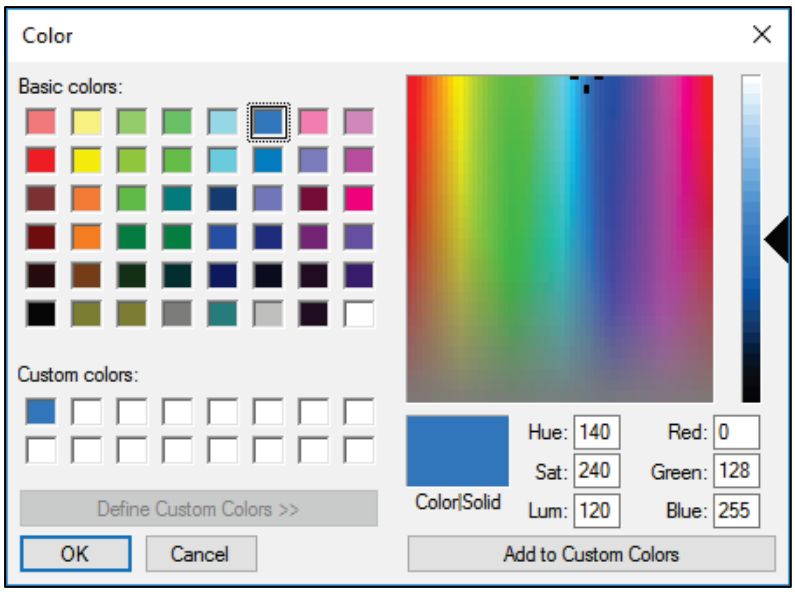
The last thing is to select the Playground Color. To do this, from the Options window, go to Layout tab and click the Browse button:



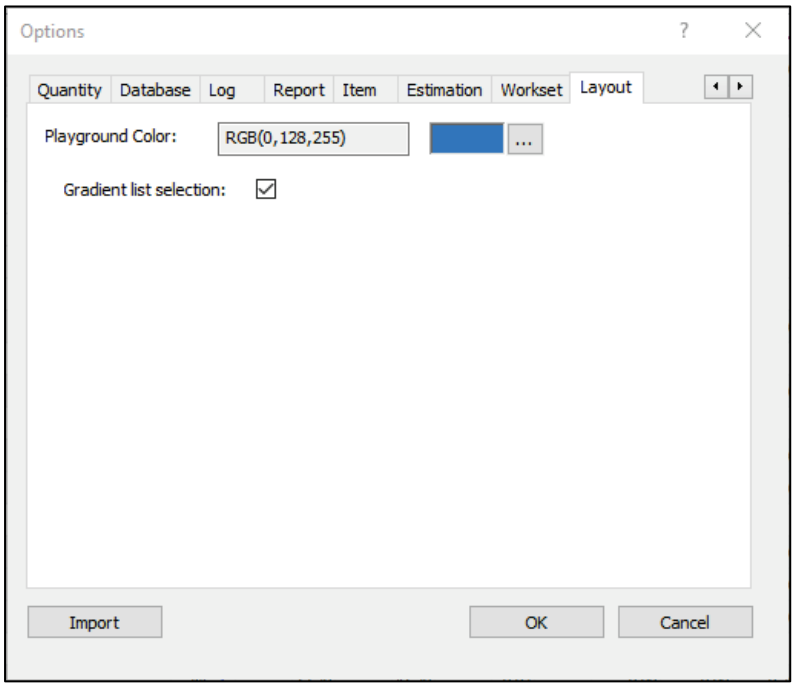
The Color window will appear:



Choose the background color:



Press **Add to Custom Colors** and click **OK**.

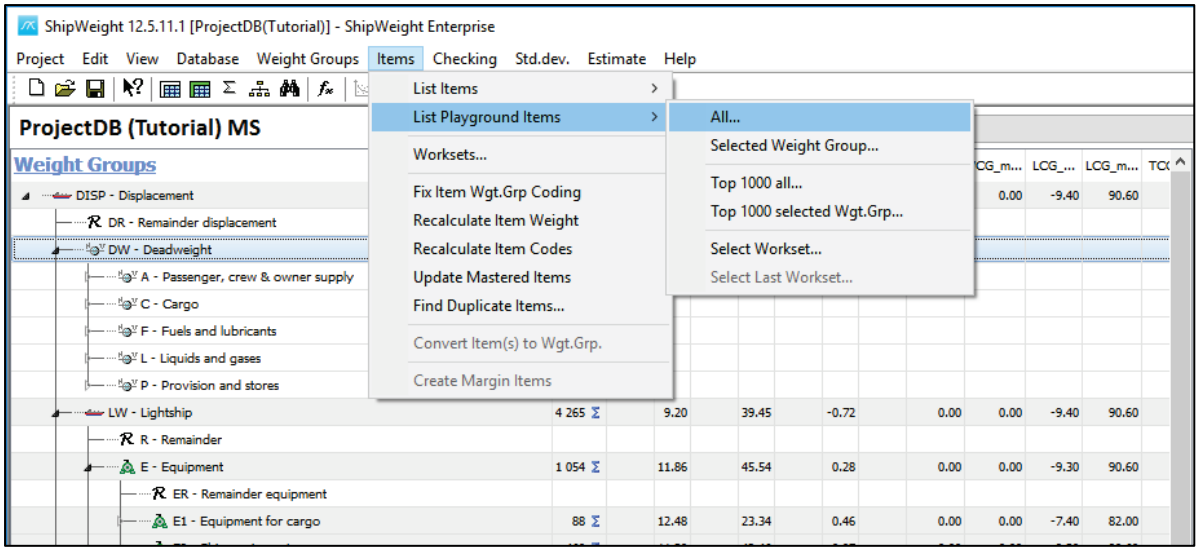


This was done to distinguish the difference between the live database and the playground area database.

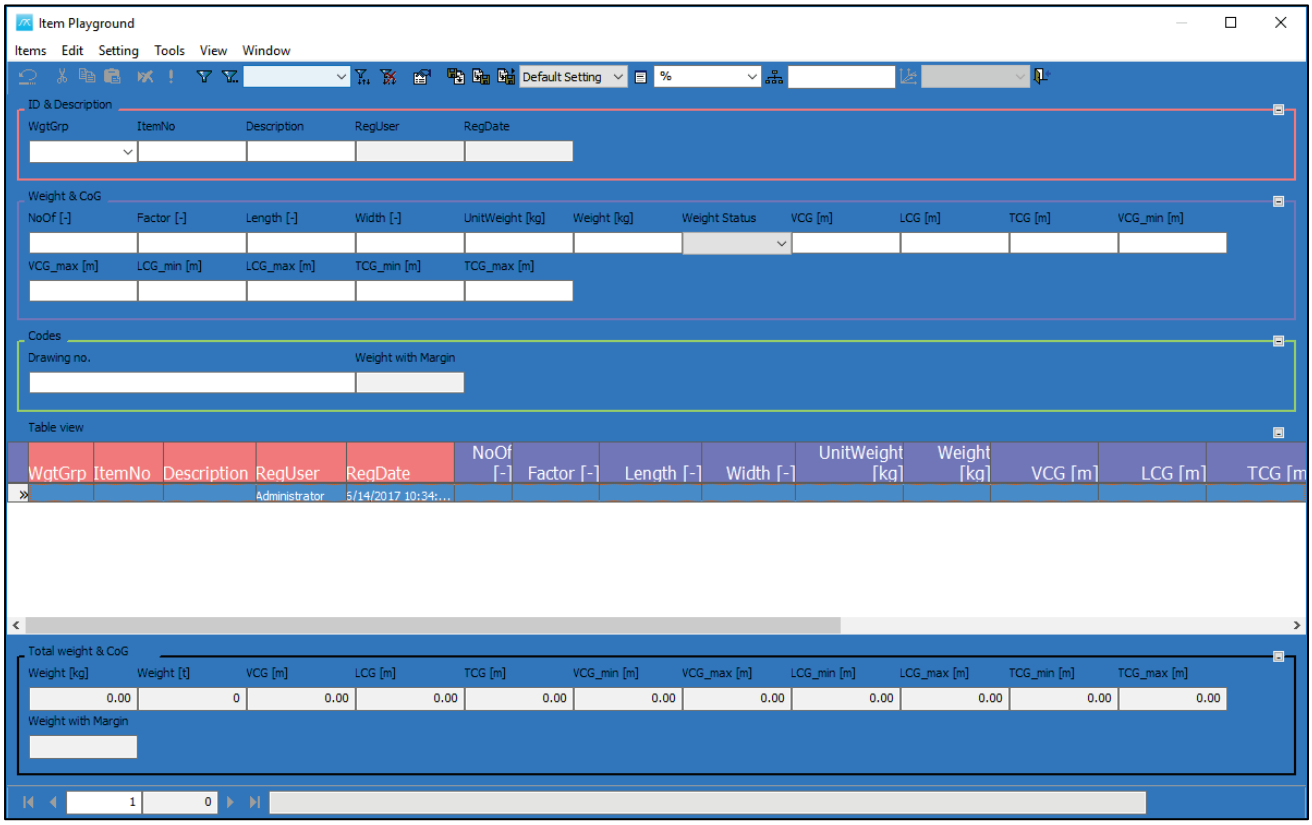
Click OK to close the Options window.

Step 5: Open the Item Playground Window

From ShipWeight main menu -> Items -> List Playground Items -> All…



The Item Playground window opens:

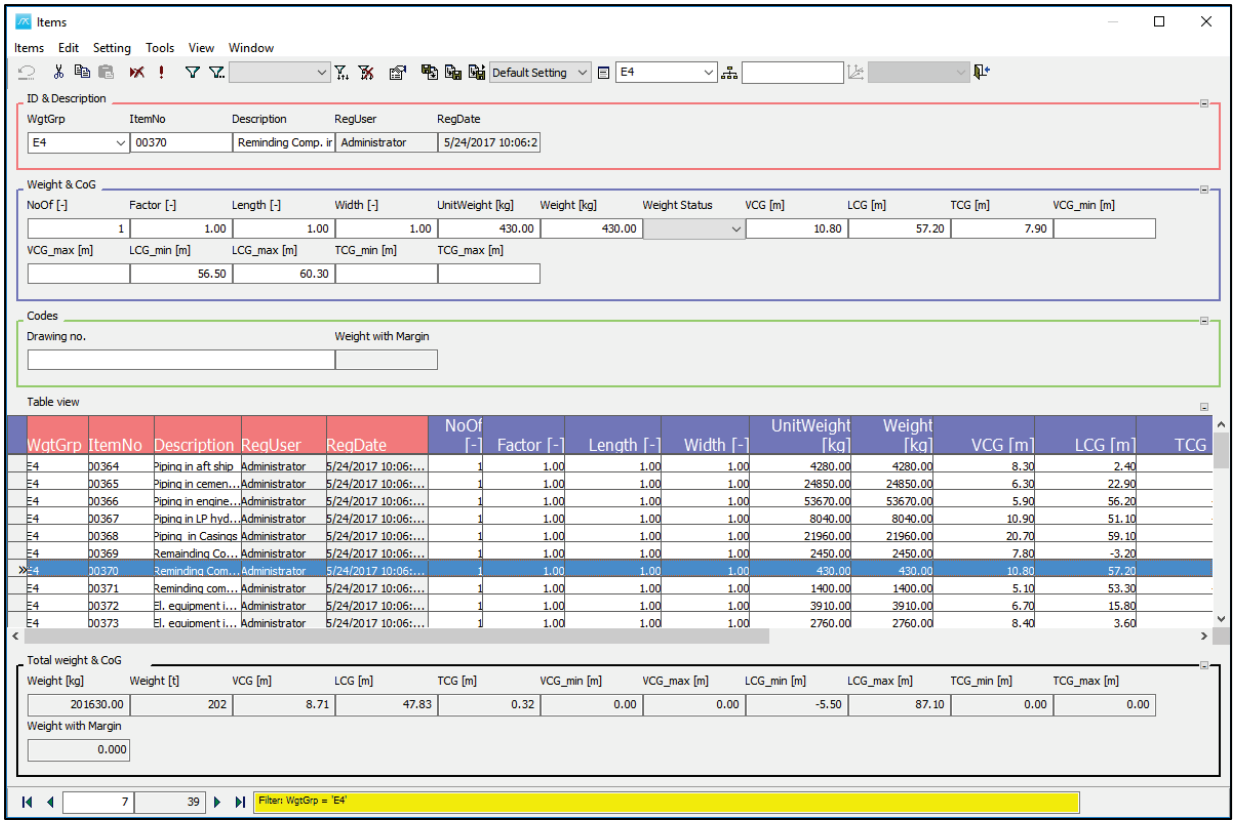


The playground window got the blue background, so we clearly can see this is working in the playground and not in the live database (the Items window).

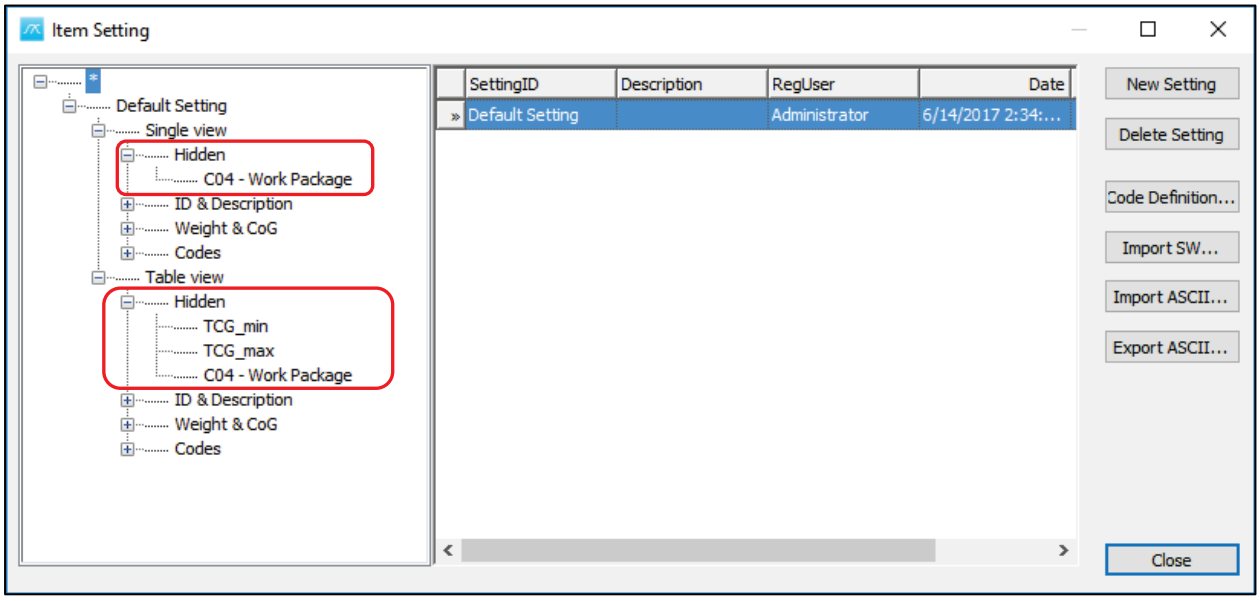
So, currently there are no items in the playground window. Now we have to check some items into the playground. Close the Playground window for now.

Step 6: Assign items to a workset and check out the workset

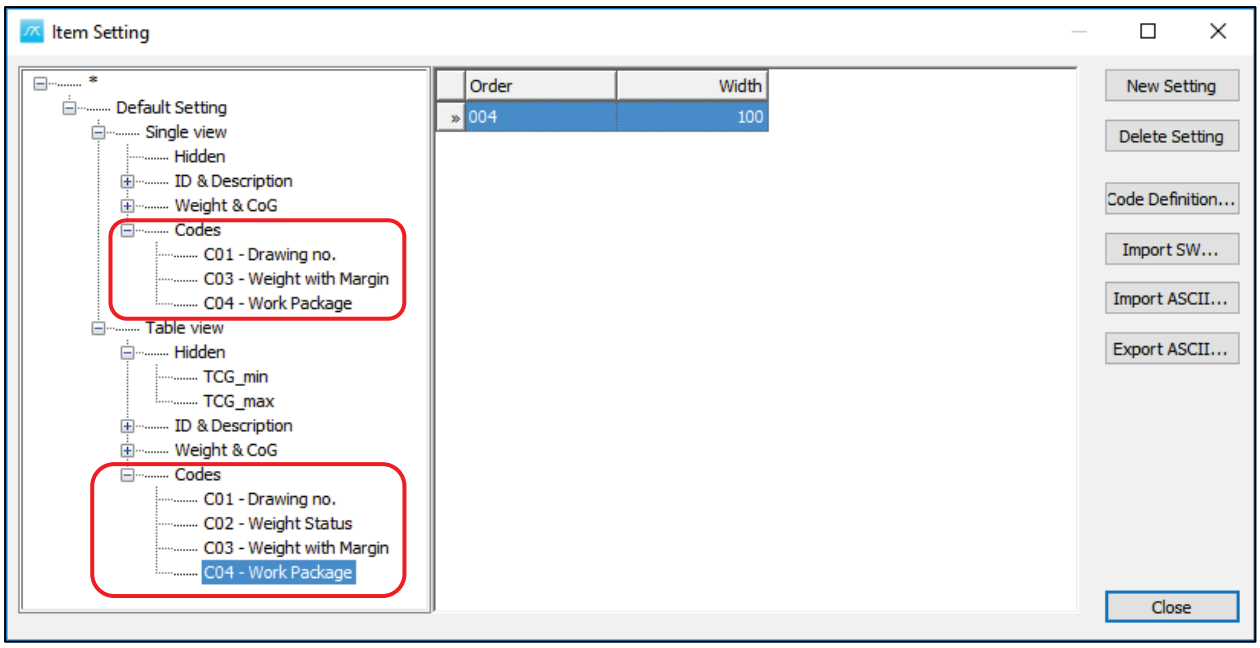
To do this we need to select items in the live database, mark them with the work package and check them out. So, open up the live database:



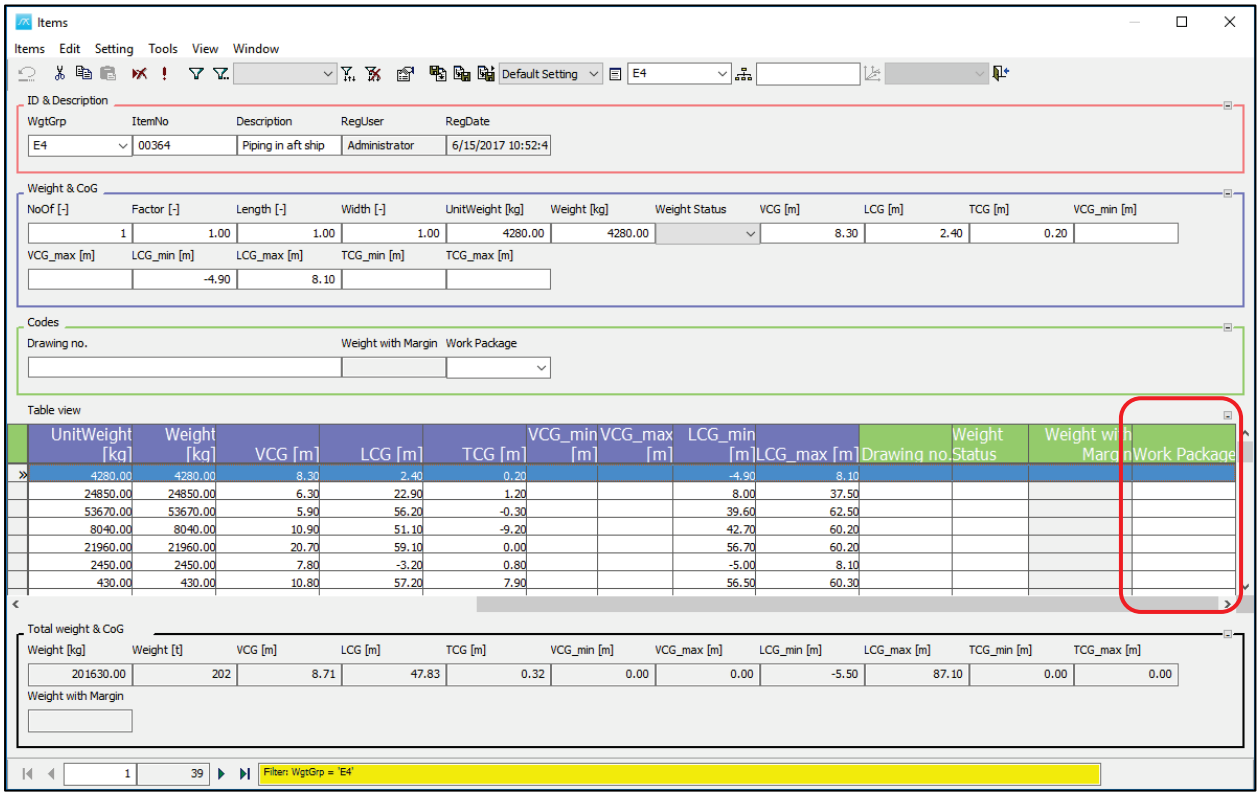
The Work Package column should already be visible in the Table view area. If it is not visible, then it means it is hidden and needs to be moved from Hidden to Codes in the Item Settings window. So, open the Items Settings window from Setting menu -> Item Settings… and expand the single and table view Hidden folders:



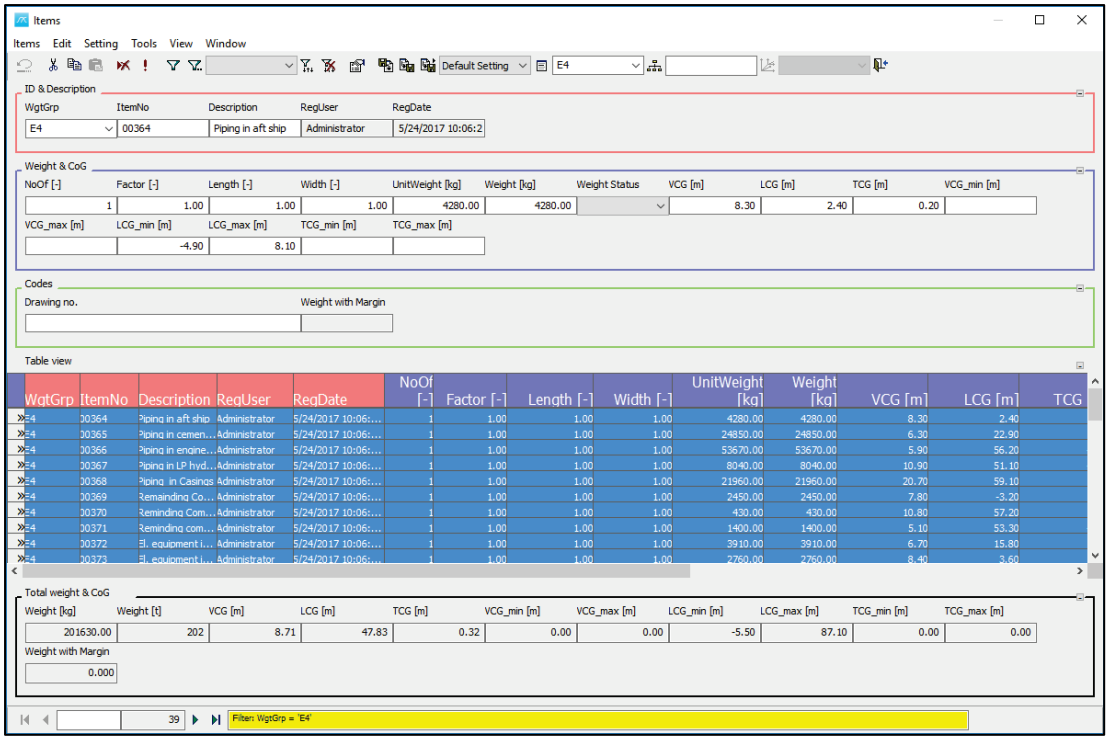
Because C04 – Work Package is hidden, we need to drag and move it to Codes folder:



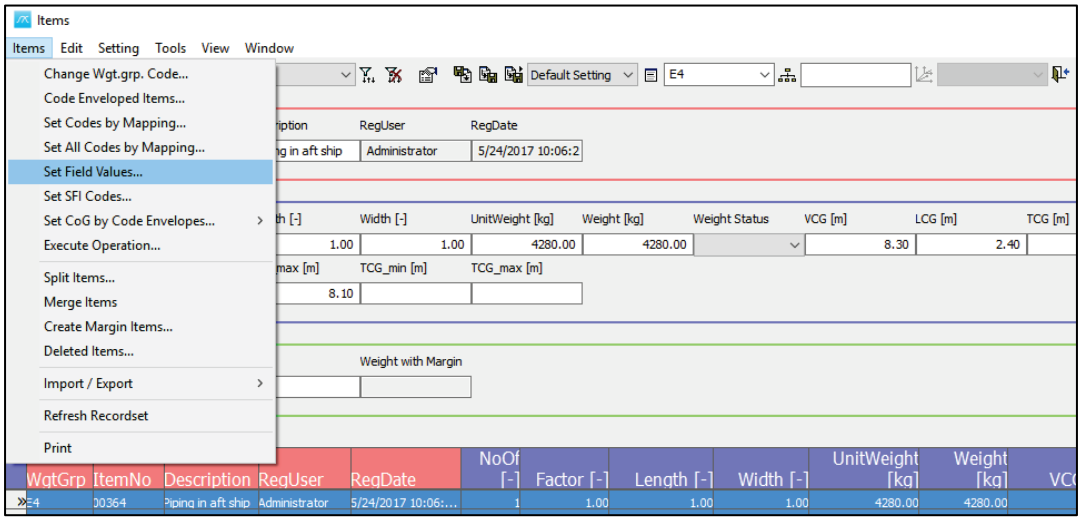
Now press Close. You will notice that the Work Package column has been added in the Table View:



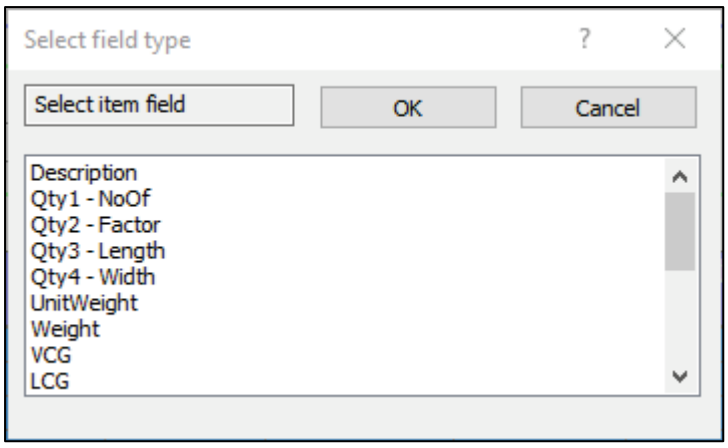
Select all of the items in group E4 using Ctrl A



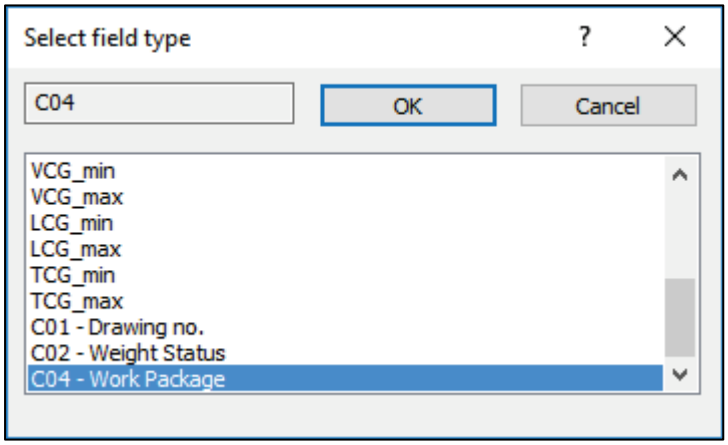
and go to **Items** menu and select **Set Field Values…**



The Select field type window will open:

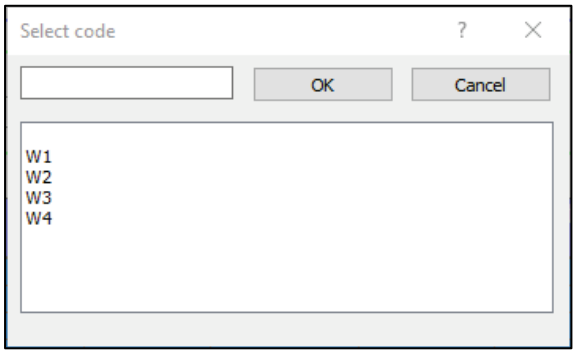


Select **C04 – Work Package**:

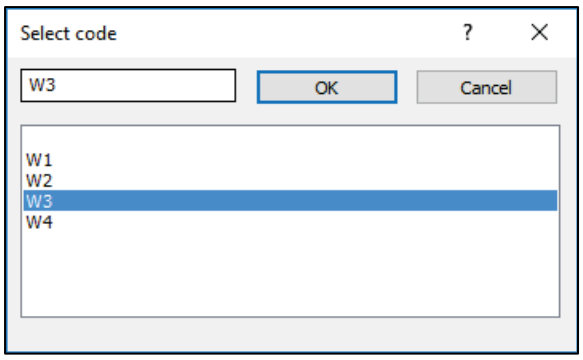


And then press **OK**.

The Select code window will appear:

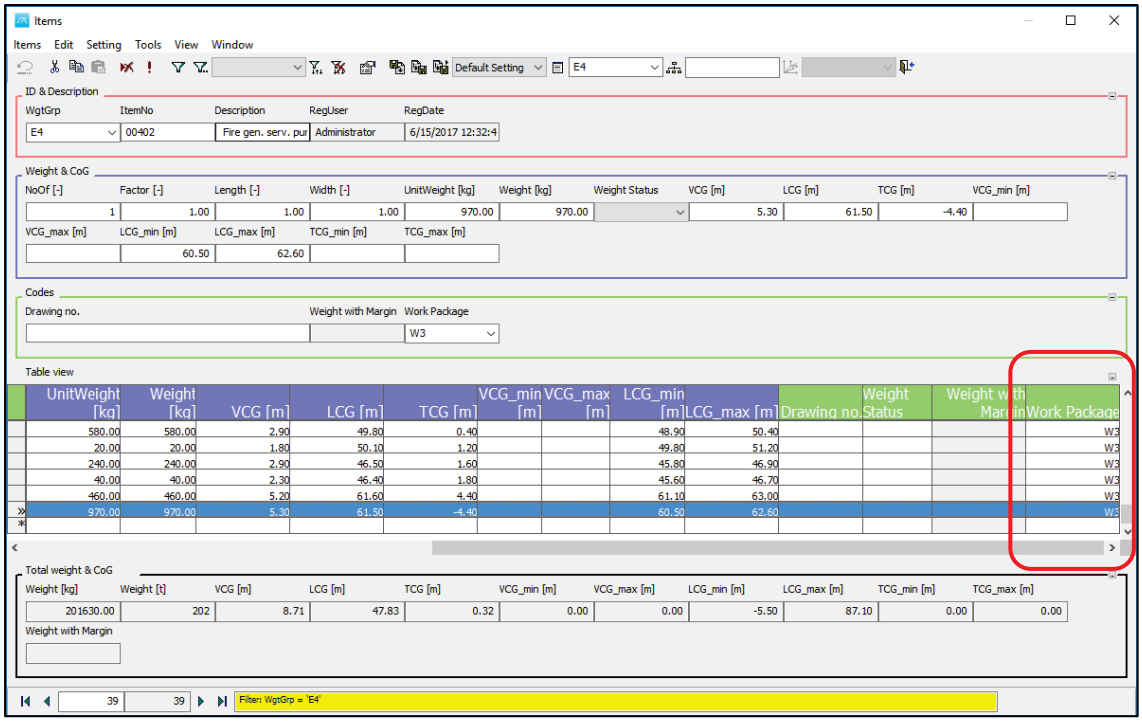


Assign all of this to **W3** code to group the items:



And press **OK**.

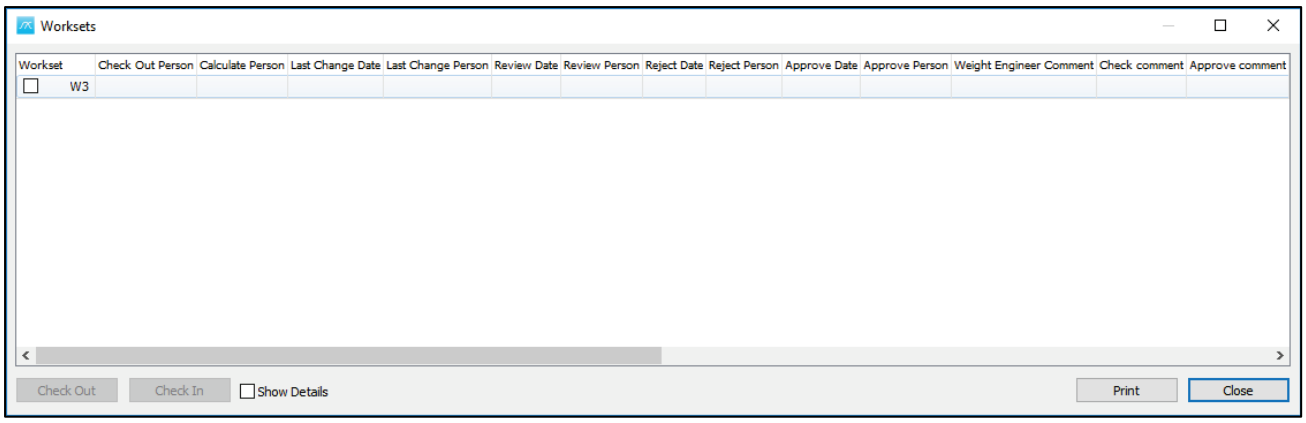
Now, if we scroll to the right, we can see the work package, we have W3 for all items from E4 group, and they are still in the live database:



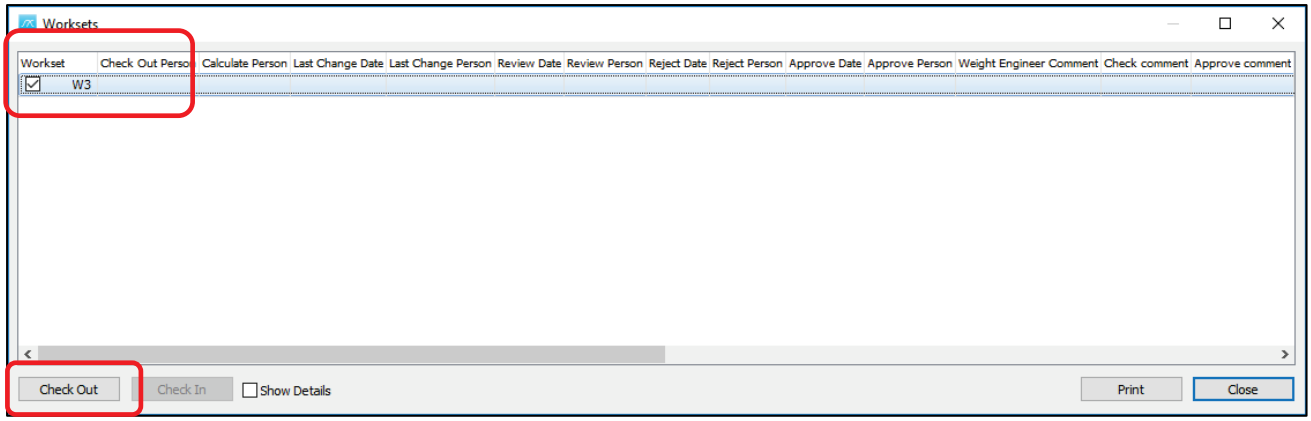
To get these items into the playground area, we need to check them out.

Go to Items menu and select Worksets…

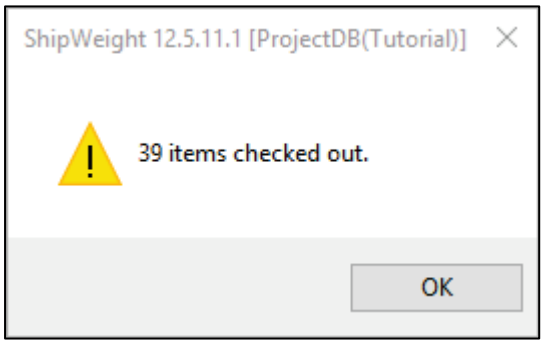
The Worksets window opens:



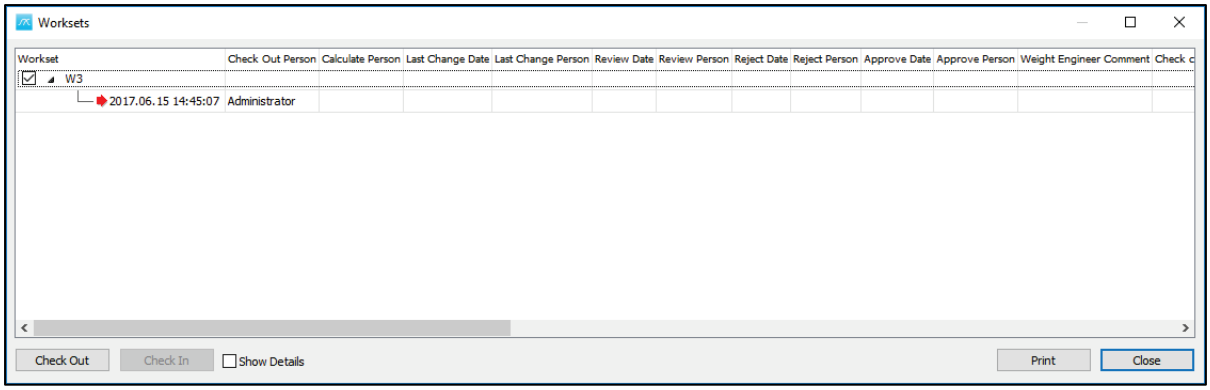
Now to check out the items market with W3, in the Worksets window select **W3** and press the **Check Out** button:



The following message will be displayed:

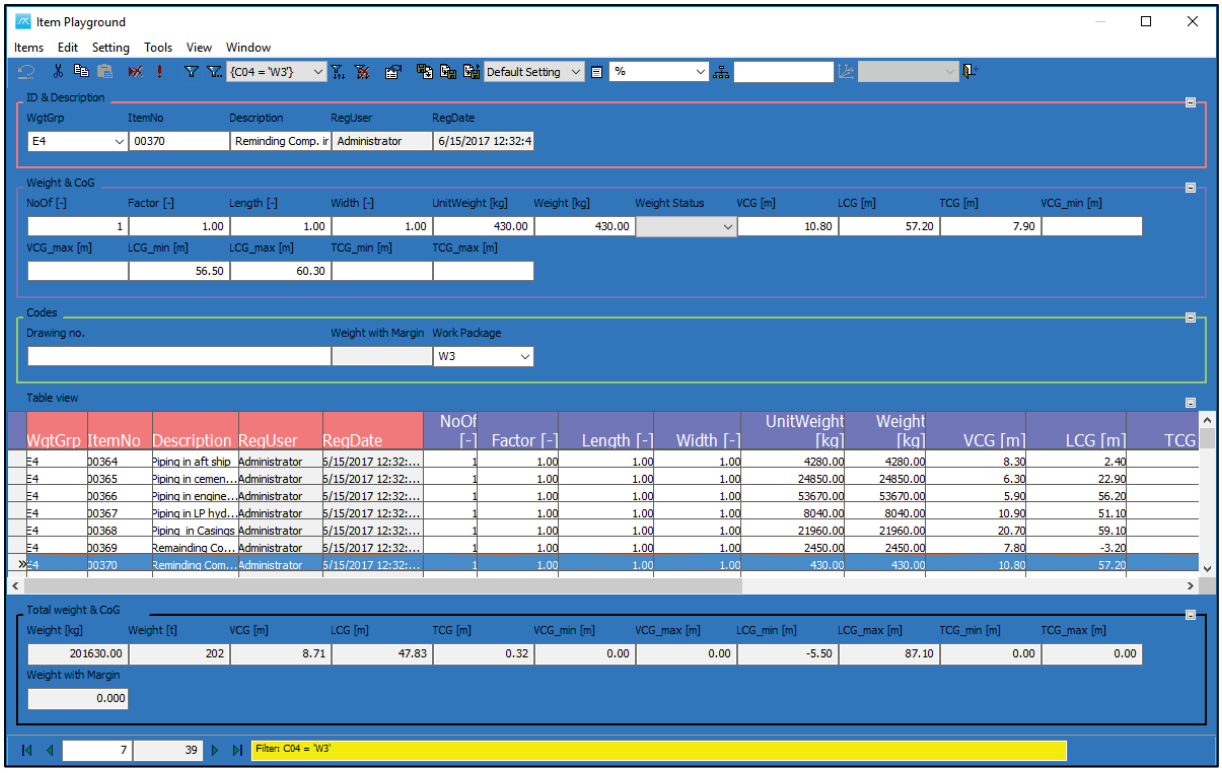


Click OK. Now we can see we have a new line with a red arrow which indicates that items with W3 have been checked out:



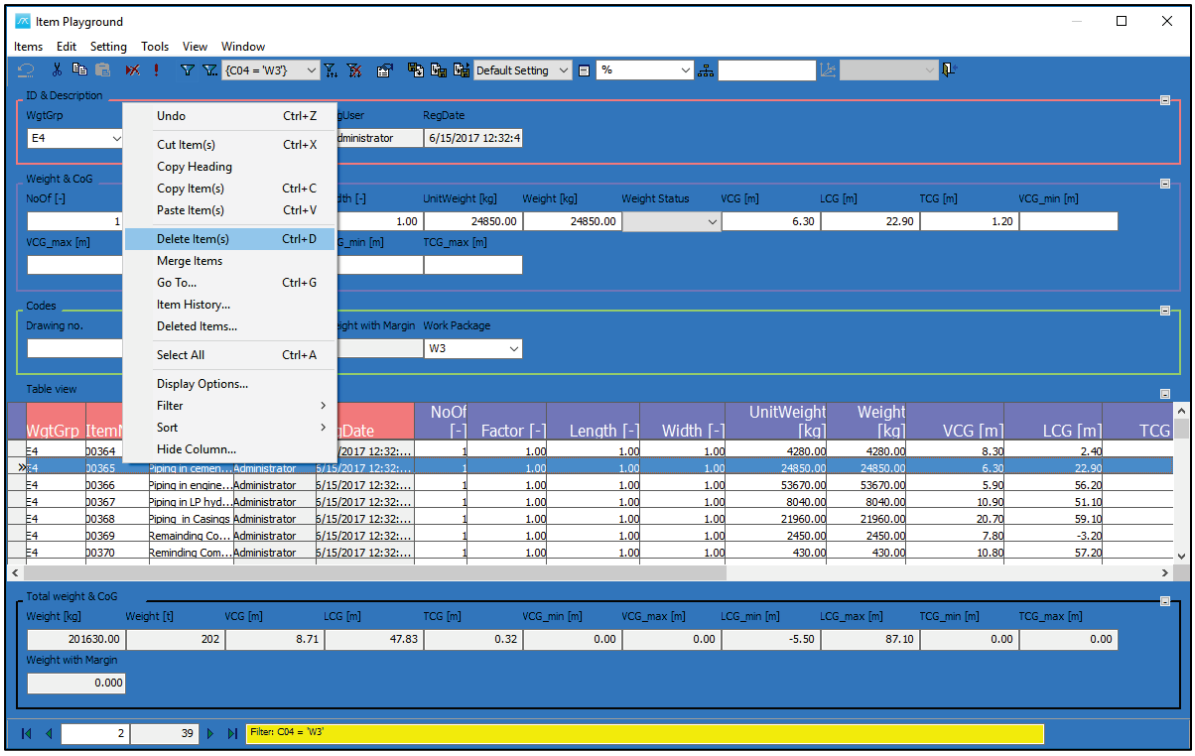
Close the Worksets window.

These items are still existing in the live database (Items window), but also a copy of them have been moved into the Playground area.

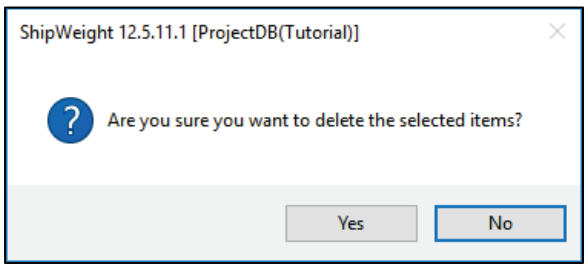


Step 7: Make your changes to the weights in the playground area!

For example delete one item, by using right click and Delete option:

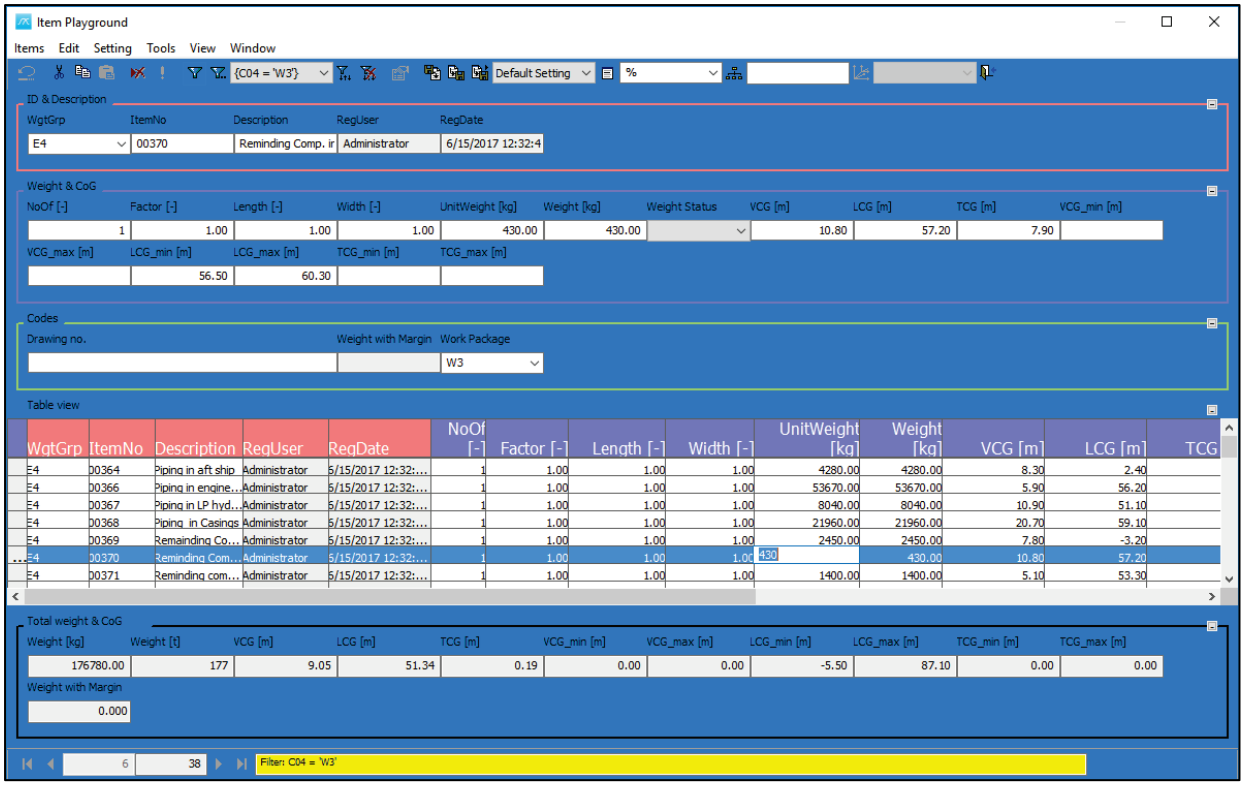


You will be asked the following:

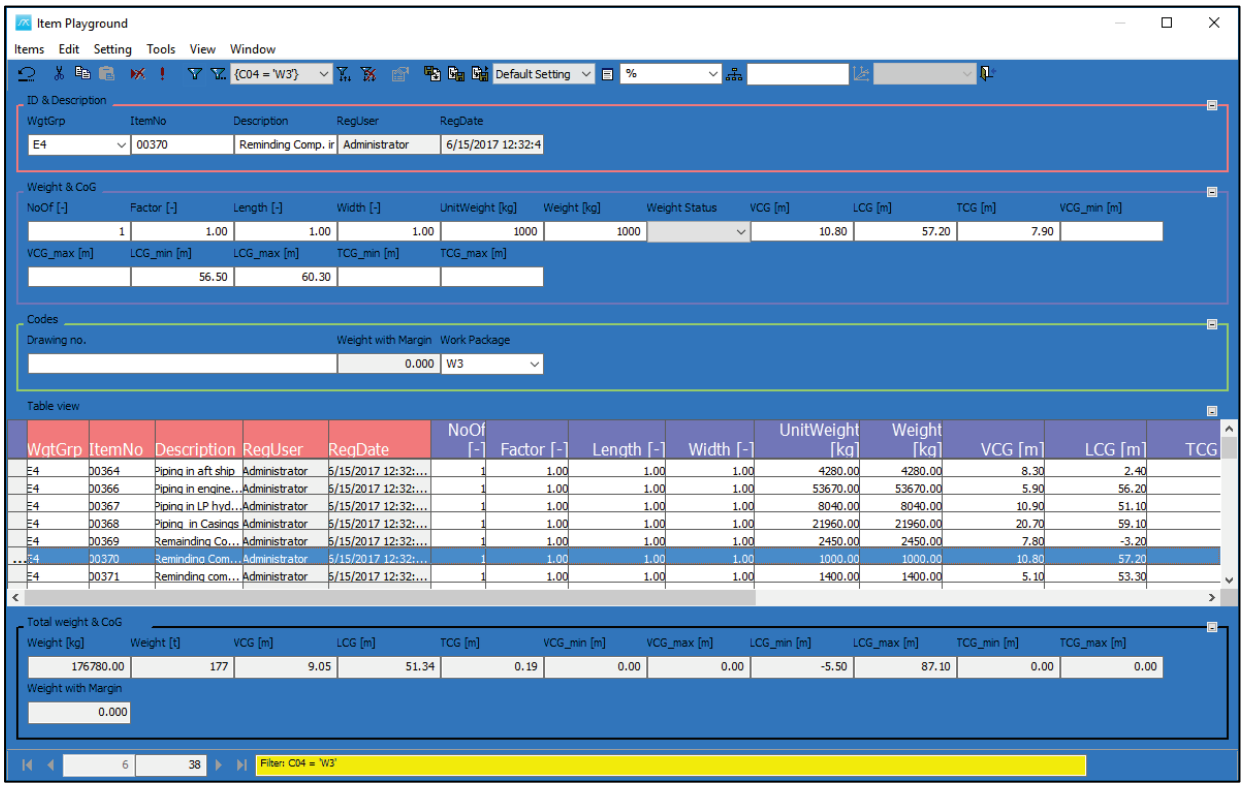


And click **Yes**.

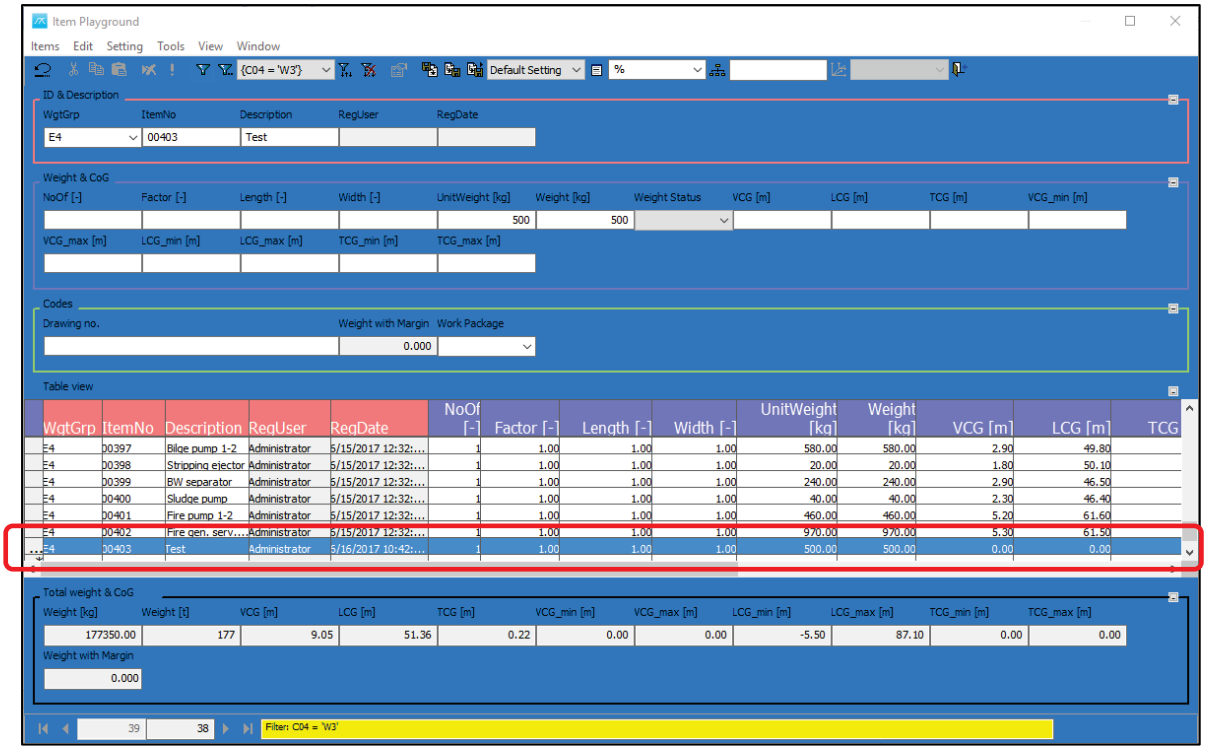
You can also change the UnitWeight for one item, for example:



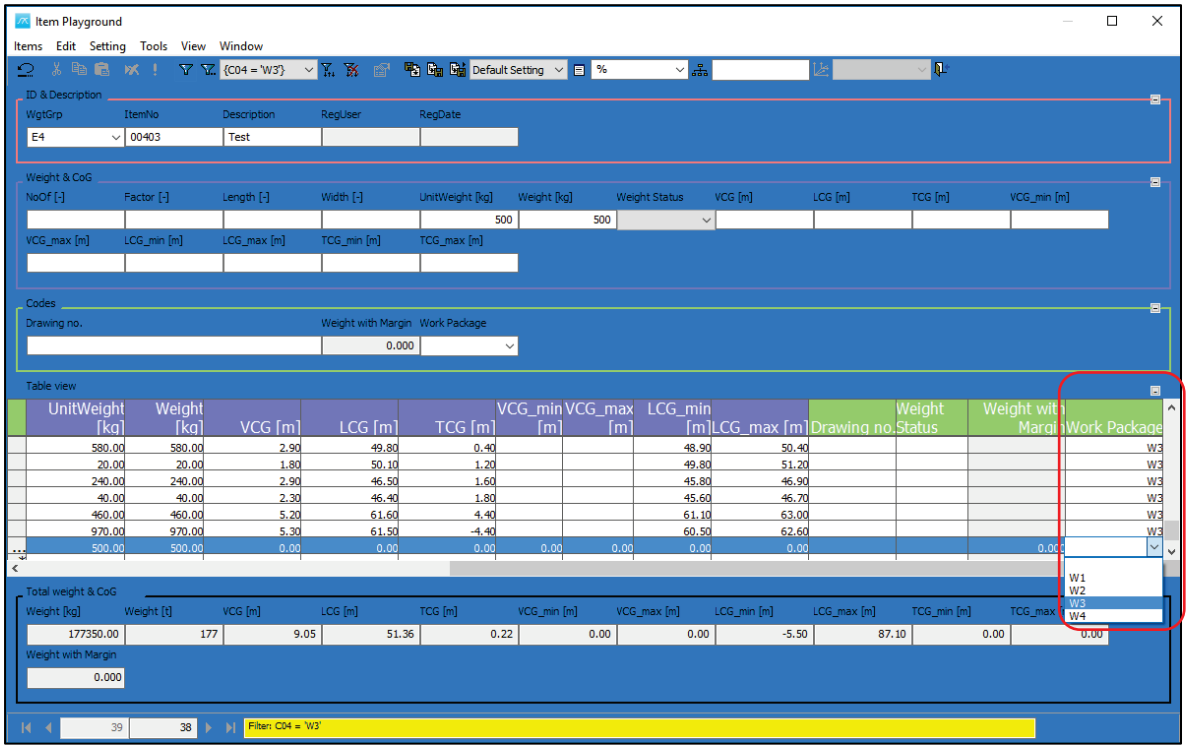
For item no 00370 instead of 430 for UnitWeight, type for example 1000:



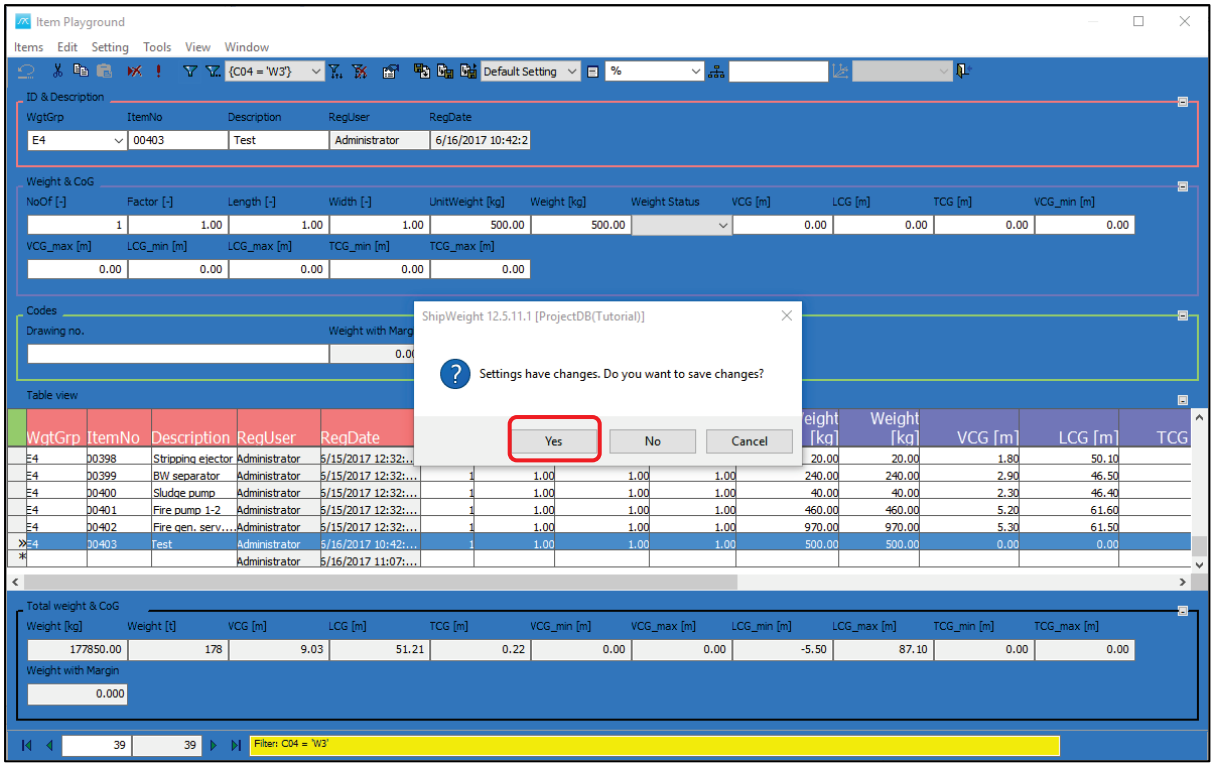
Or add a new item:



After we added the new item, we also need to assign it to the work package. So go the **Test** item line, to **Work Package** column and select from the list **W3**:

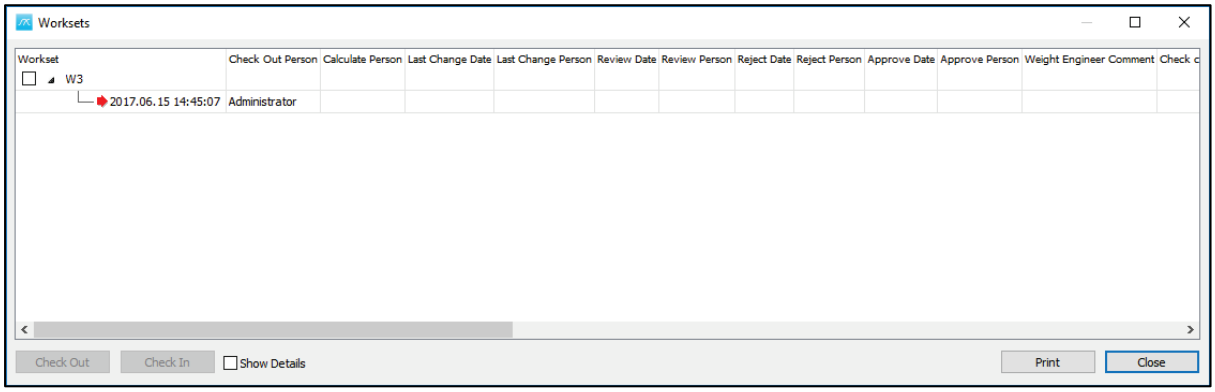


Close the Item Playground window and save.

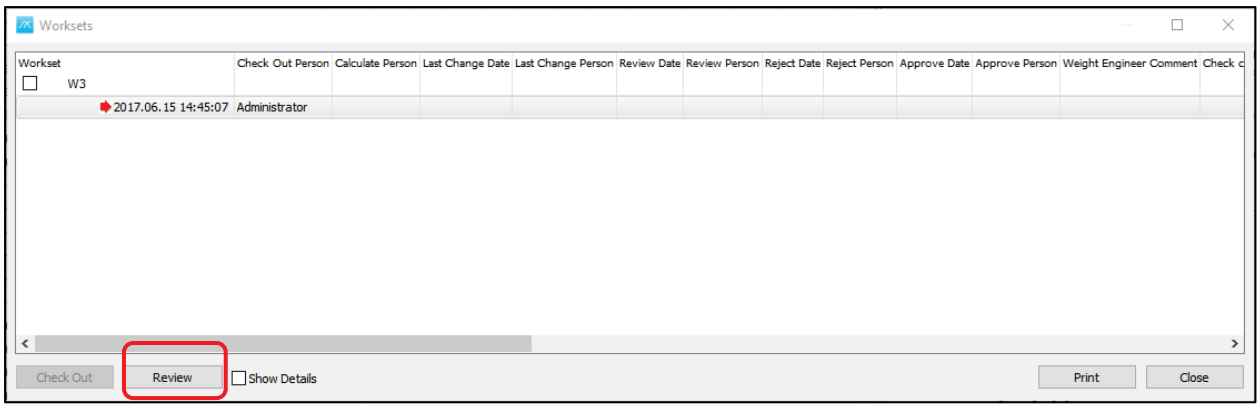


Step 8: Validate the change in the net change window!

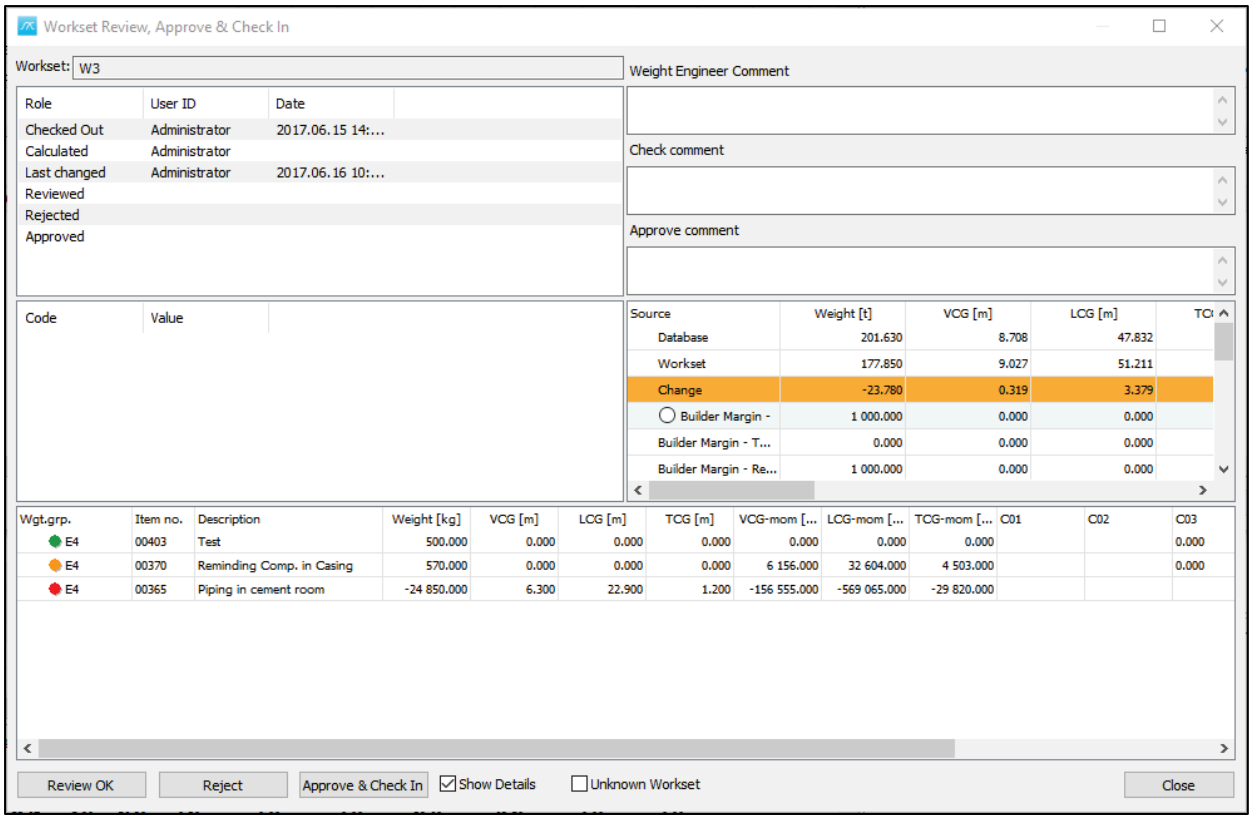
Now we can go and check in the net changes. Go to Items menu, then Worksets…



Click on the red arrow, which represents the items that we checked out and click the **Review** button.



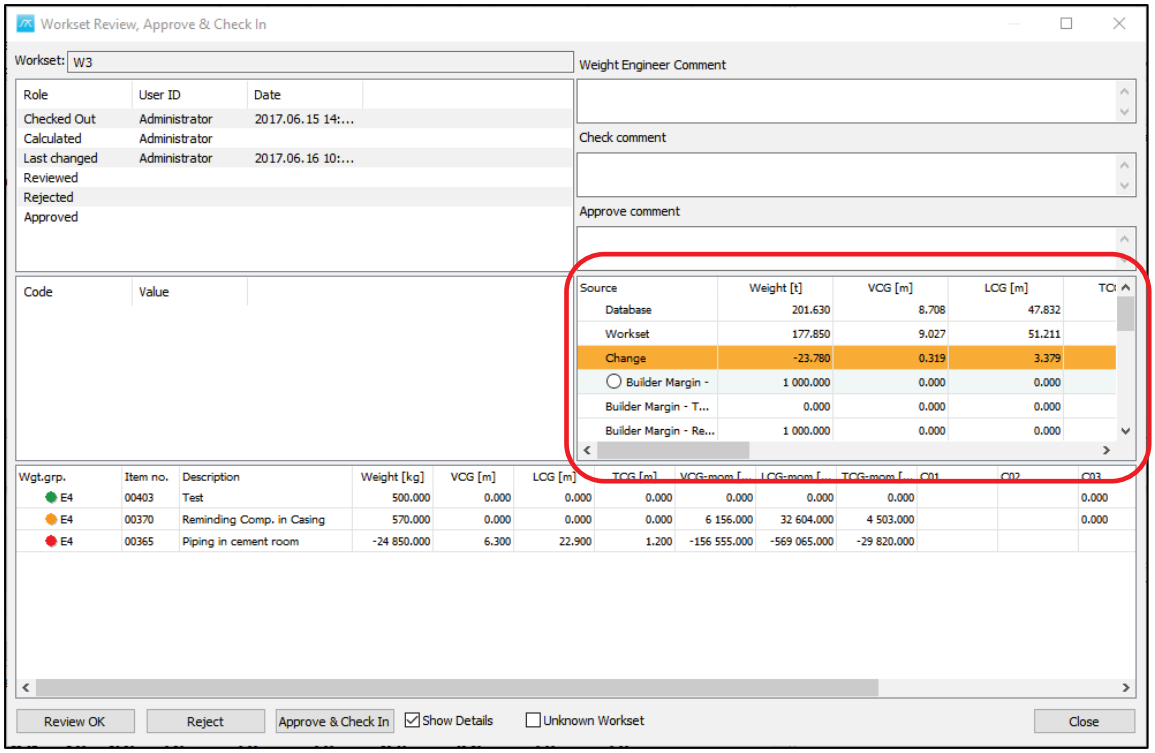
Once **Review** button has been clicked, the **Workset Review, Approve & Check In** window will appear:



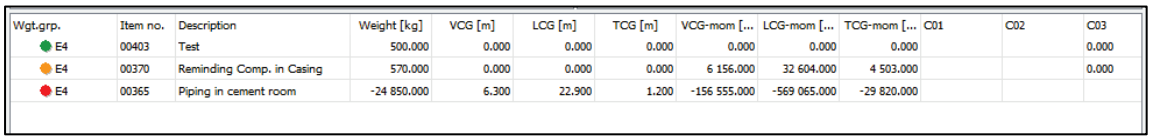
In this window we can see the net changes that have been done to the workset.

In the upper level, it can be noticed the User ID detail, who checked the workset out, and the date, also who is the last person that changed it.

Also, the net overall changes can be seen here:



Also the detail changes, under the overall changes:

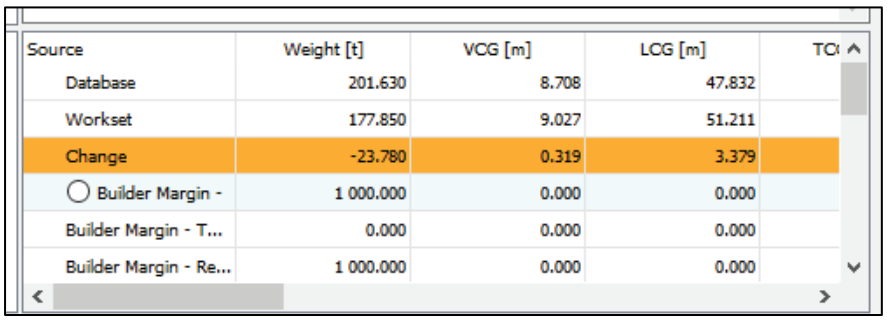


From the detail changes, we can see a new item (Test) has been added. The green circle means it is a new item.

Orange circle indicates that the item had some changes to it.

The red circle means that the item has been removed.

Finally, the net change of all these items is shown here, in the orange line:



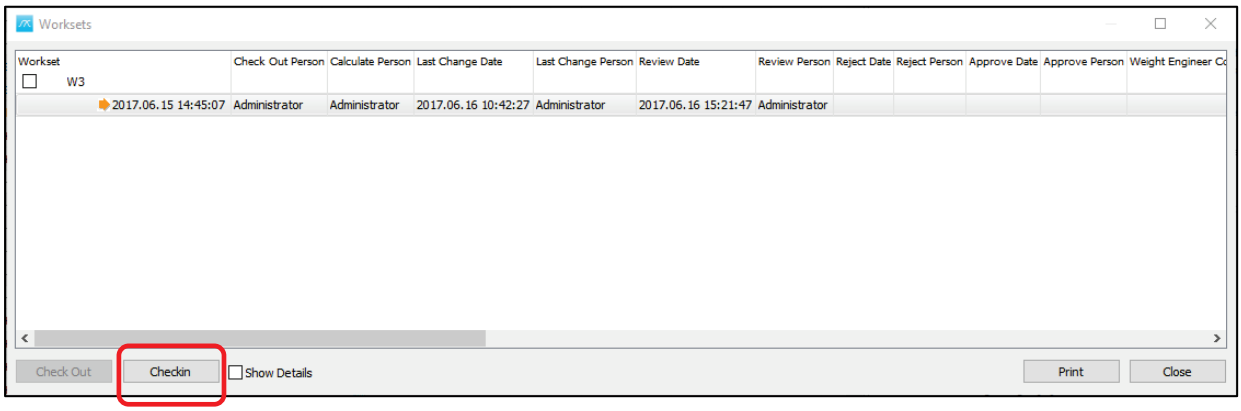
Step 9: Review, Accept (or Reject) change

Now to approve this click **Review OK**.

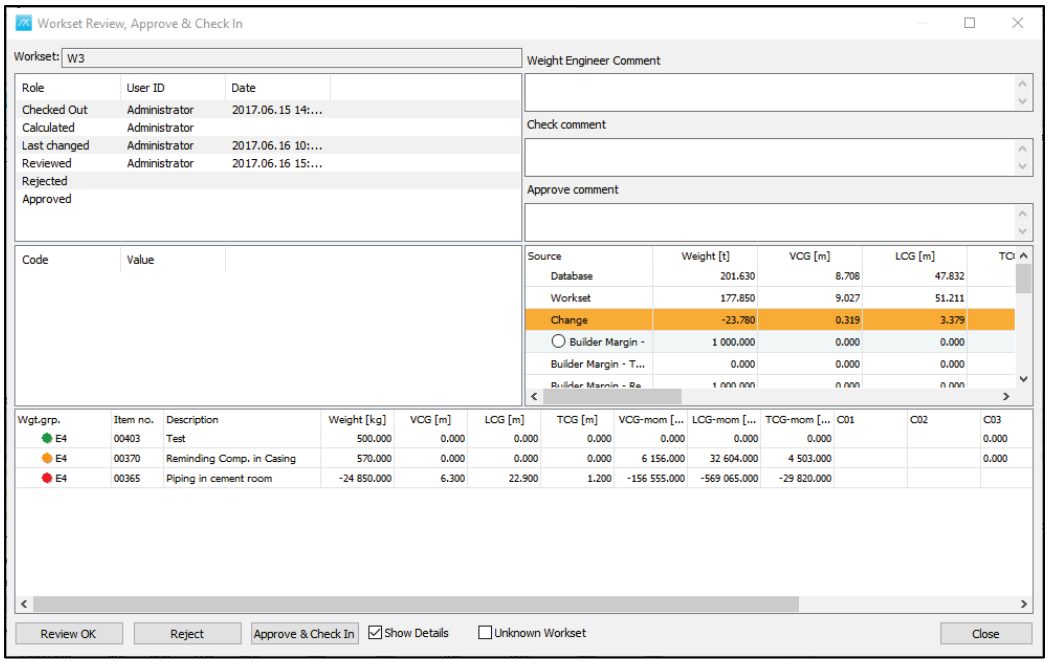
If the results are not satisfactory click **Reject**.

If we click **Review OK**, and close the window, we will see the arrow changed from red to orange, meaning that this has now been reviewed ok, but it has not yet been checked in.

So, no changes has currently been done to the live database. To make the changes effective to the live database, select the orange arrow and click **Checkin** button:

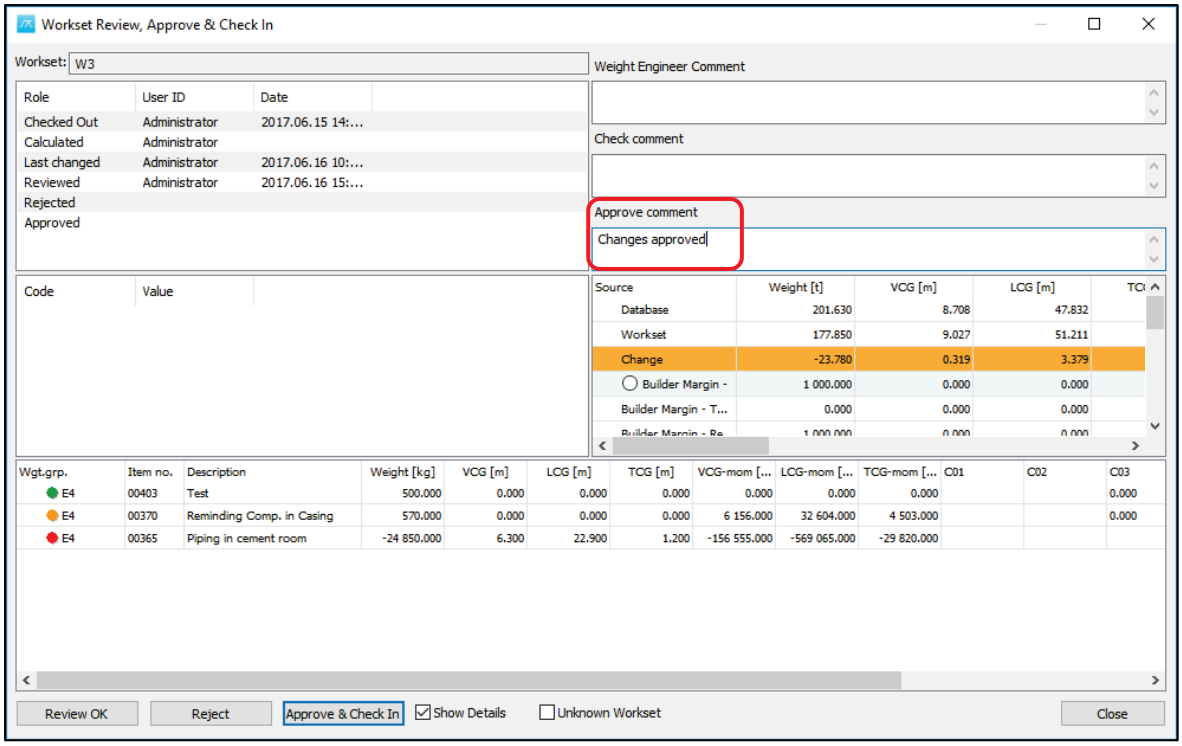


And the **Workset Review, Approve & Check In** window will open:

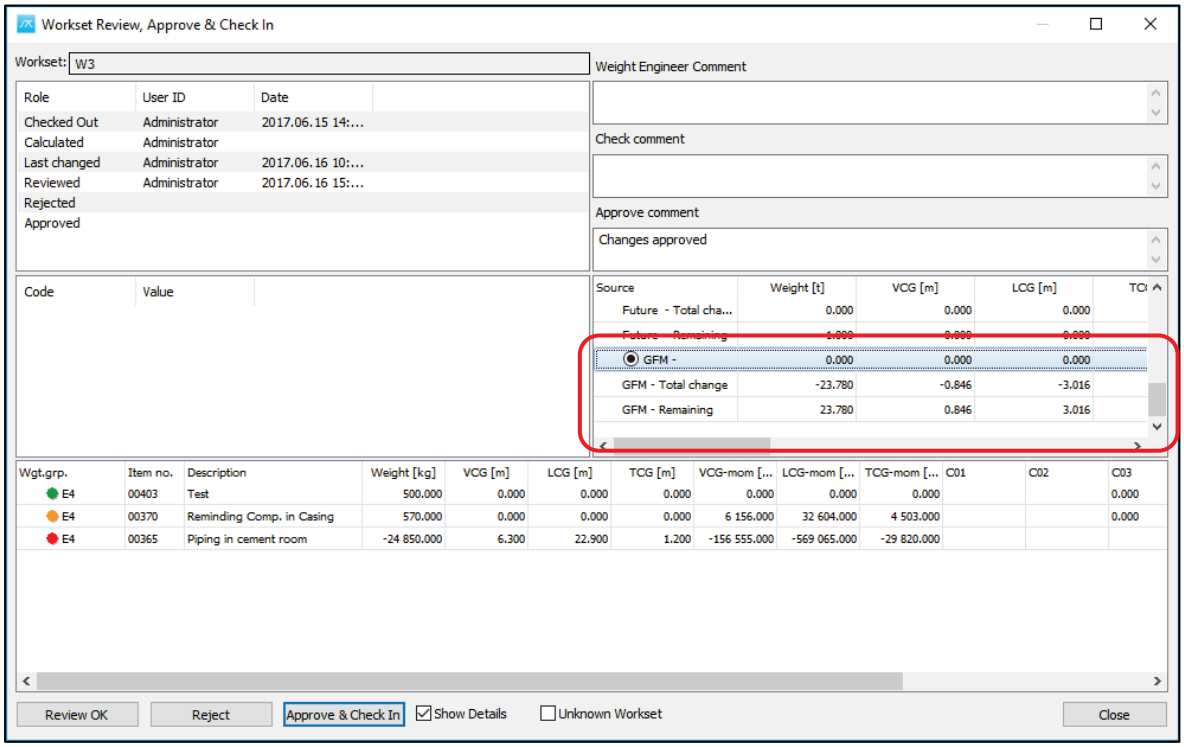


Step 10: Approve and Check In Workset

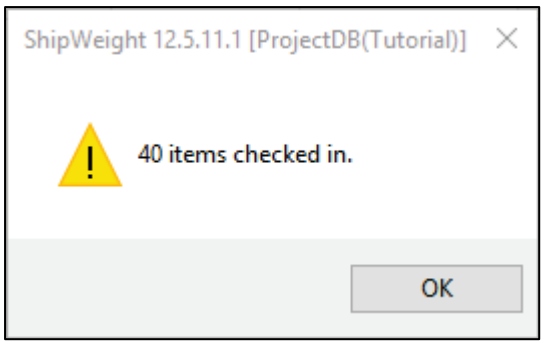
Give an approved comment:



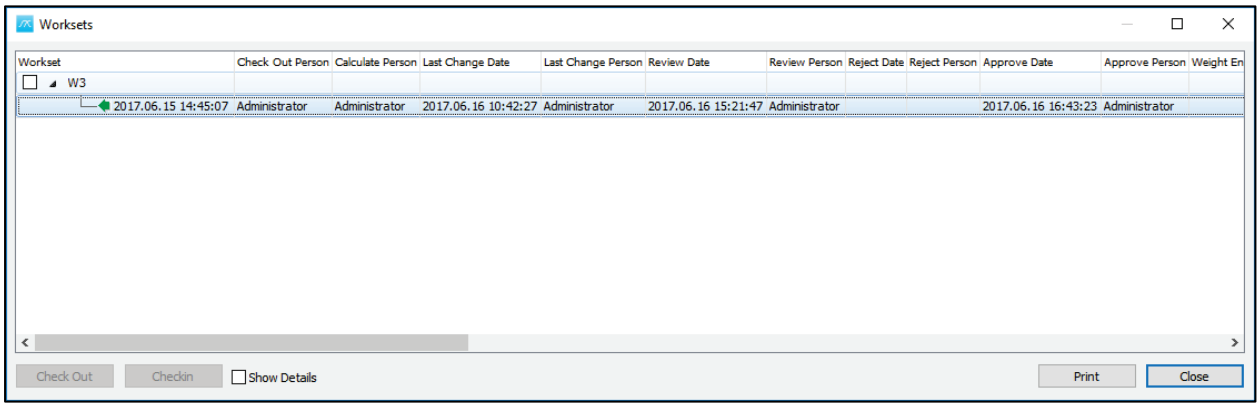
Net change must be assigned to a margin:



Then select **Approve & Check In** button. 40 items checked in:



And the orange arrow become green:



Now close the workset window. Then open the Playground area. It is empty, the items have been checked in.

And the live database has been updated with the changes done in the playground area.

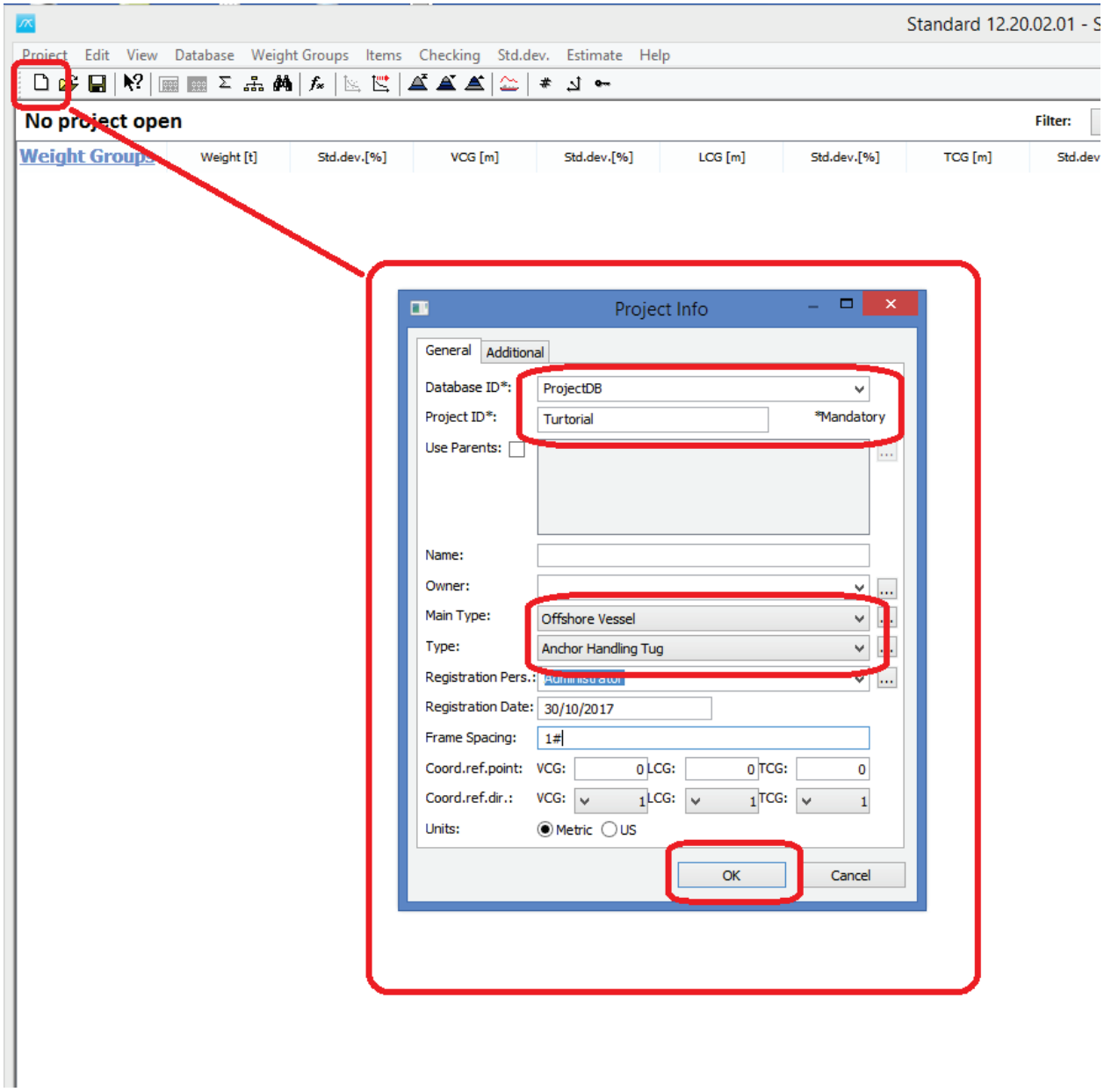
Parametric Estimation

This session will give an introduction to the parametric estimation in ShiPWeight

Step 1: Start ShipWeight and Log on

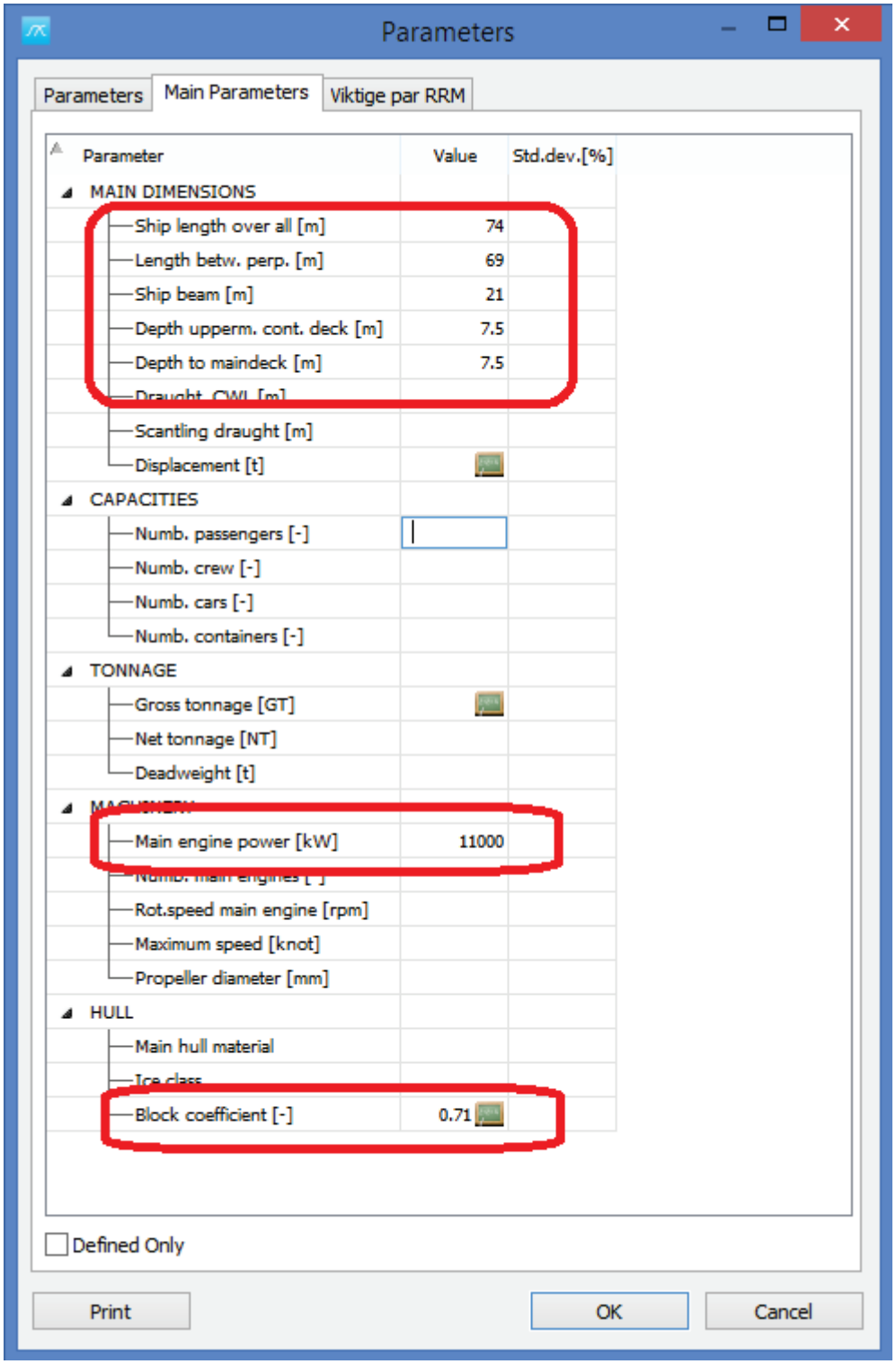
Start ShipWeight and log in to ShipWeight using the user name “Administrator” and password “admin”.

Step 2: Start a New Project



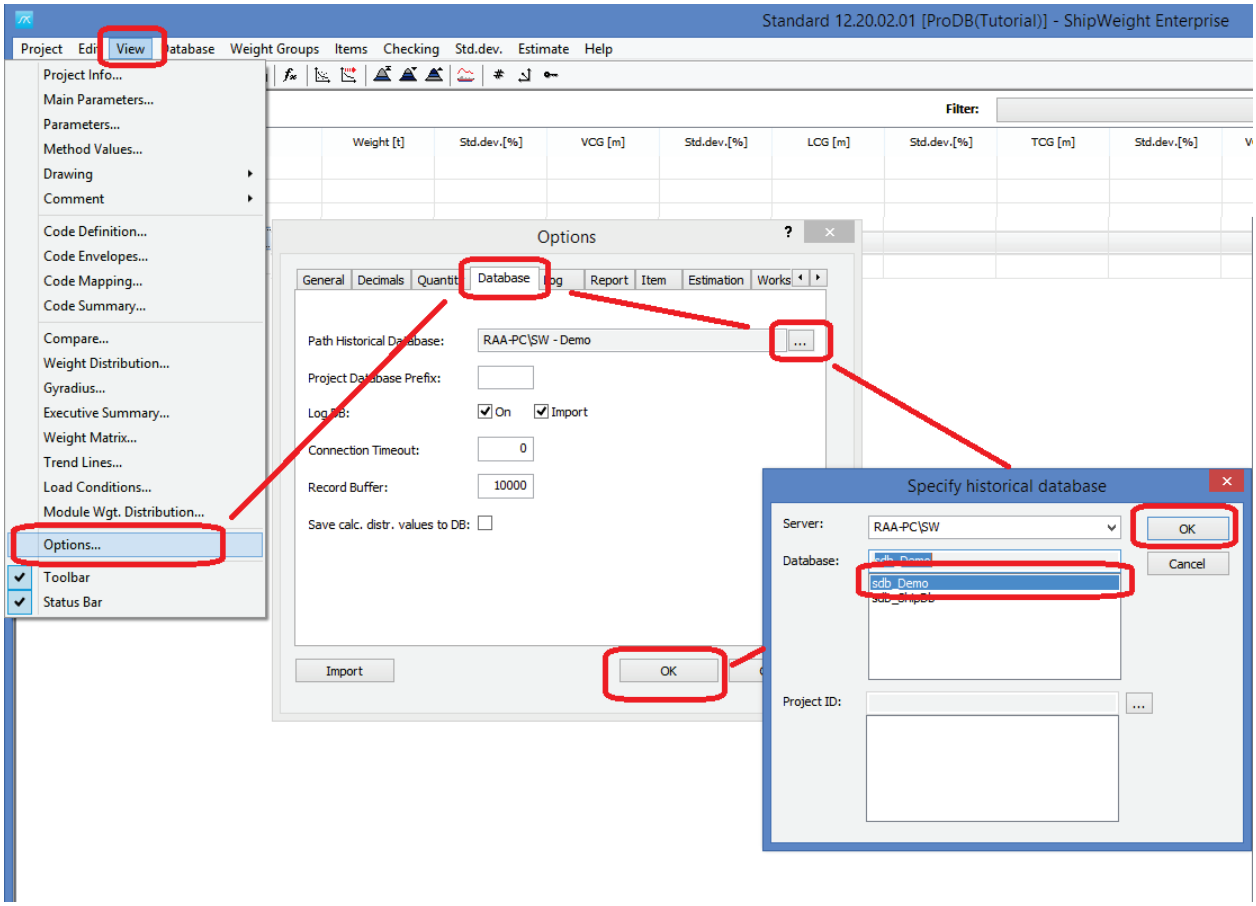
When ShipWeight opens, click the “New” button on the toolbar and select “ProjectDB” as Database ID, set “Tutorial” as Project ID, and select Main Type “Offshore Vessel” and sub type “Anchor Handling Tug”. You may also give in a vessel name if you’d like, but this is not necessary. Hit the “OK” button.

Step 3: Enter Ship Parameters



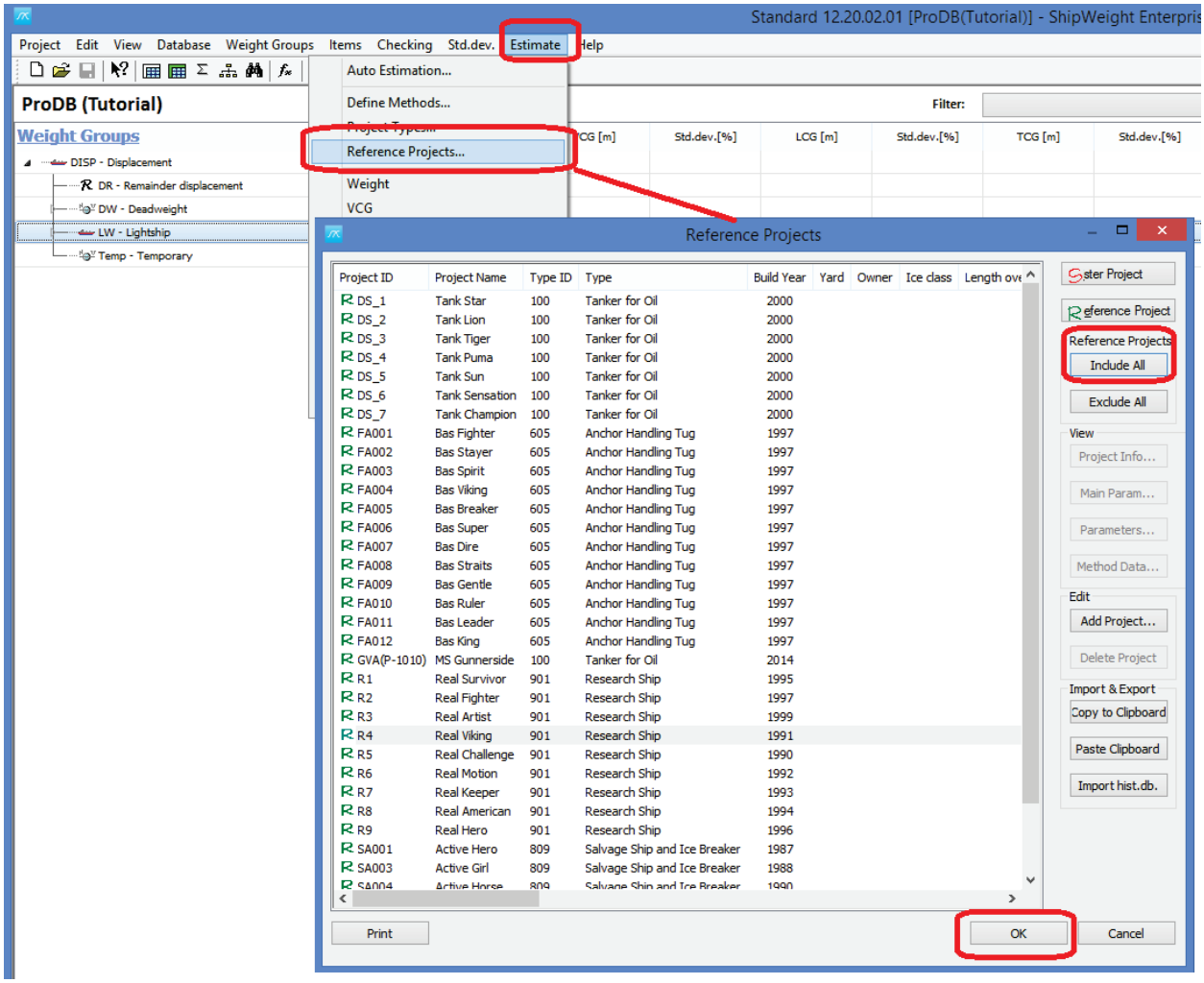
In the “Main Parameter” window that shows up, give in at least the parameters as shown above. You may give in other parameters as well if you like.

Step 4: Select the Demo Ship Historical Database



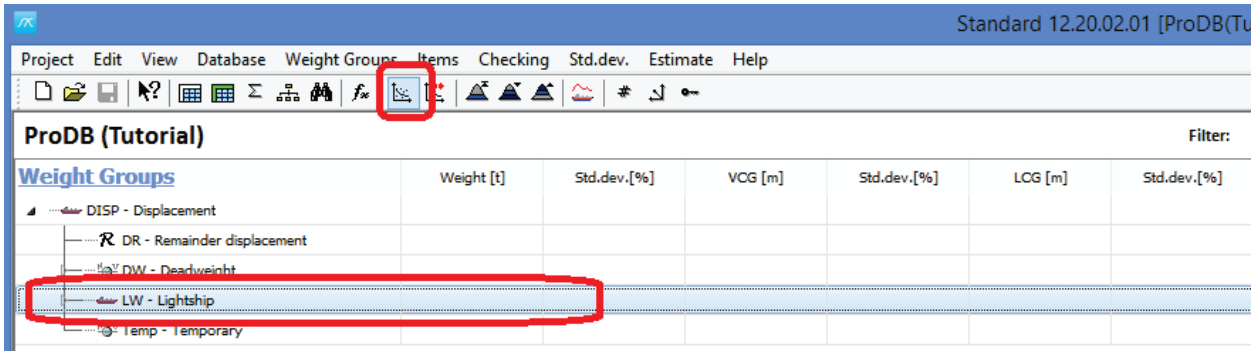
Next, go to the View menu and select the “Options…” window. Click the “Database” tabsheet in the Options window, and select the “Browse” […] button next to the “Path Historical Database”. In the pop-up window from the browse, select the “sdb_Demo” database in the list and hit the “OK” button. Next, hit the “OK” button on the Options window.

Step 5: Activate the Demo Ships in Reference Project Window



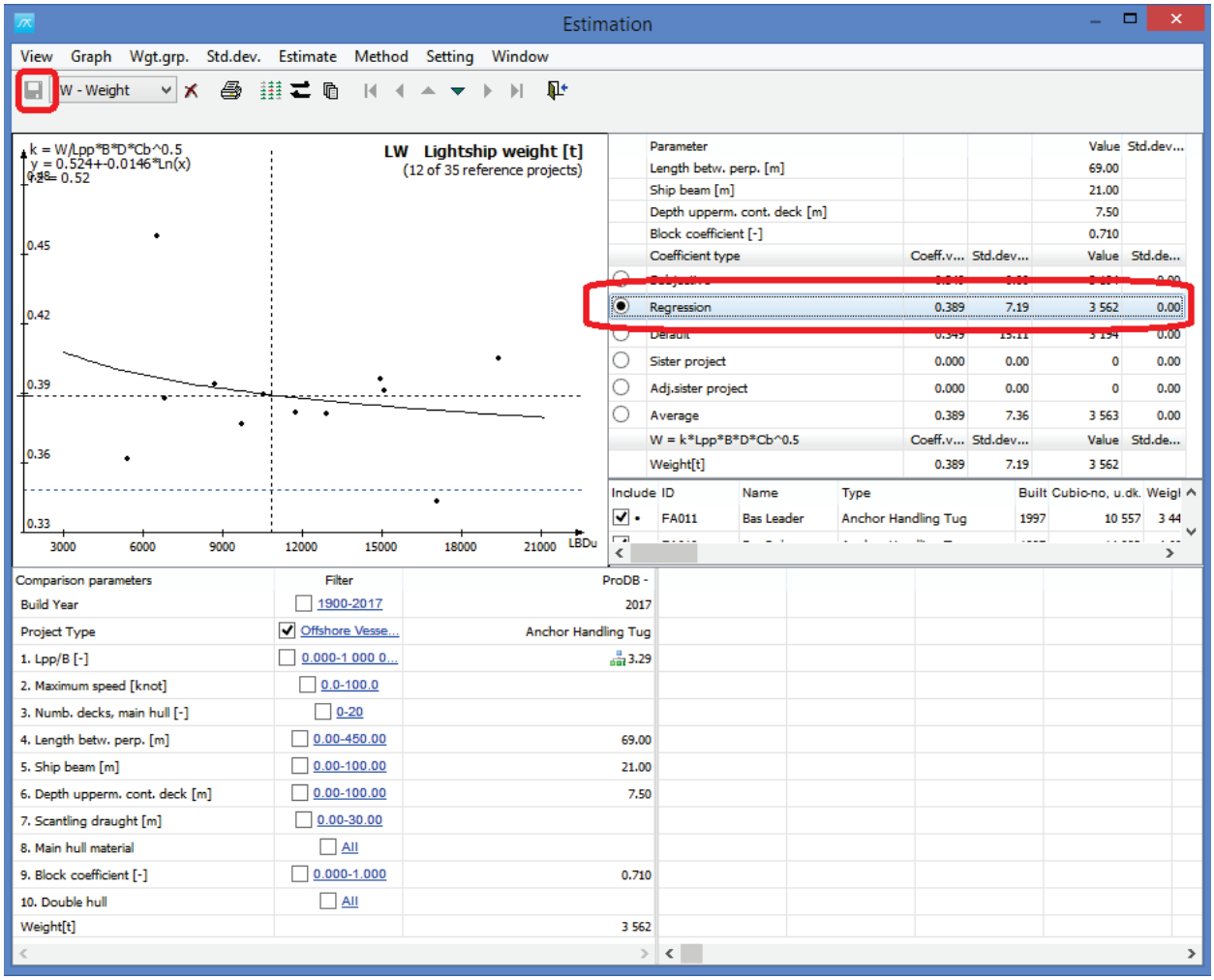
Next, head to the “Estimate” menu and select “Reference Projects…” window. In this window, selec the “Include all” button and hit “OK” button. This activates all the reference projects that in the demo database that was selected in previous step. We now have a basis ready for the parametric estimation.

Step 6: Select the Lightship Weight Group and Open the Estimation Window



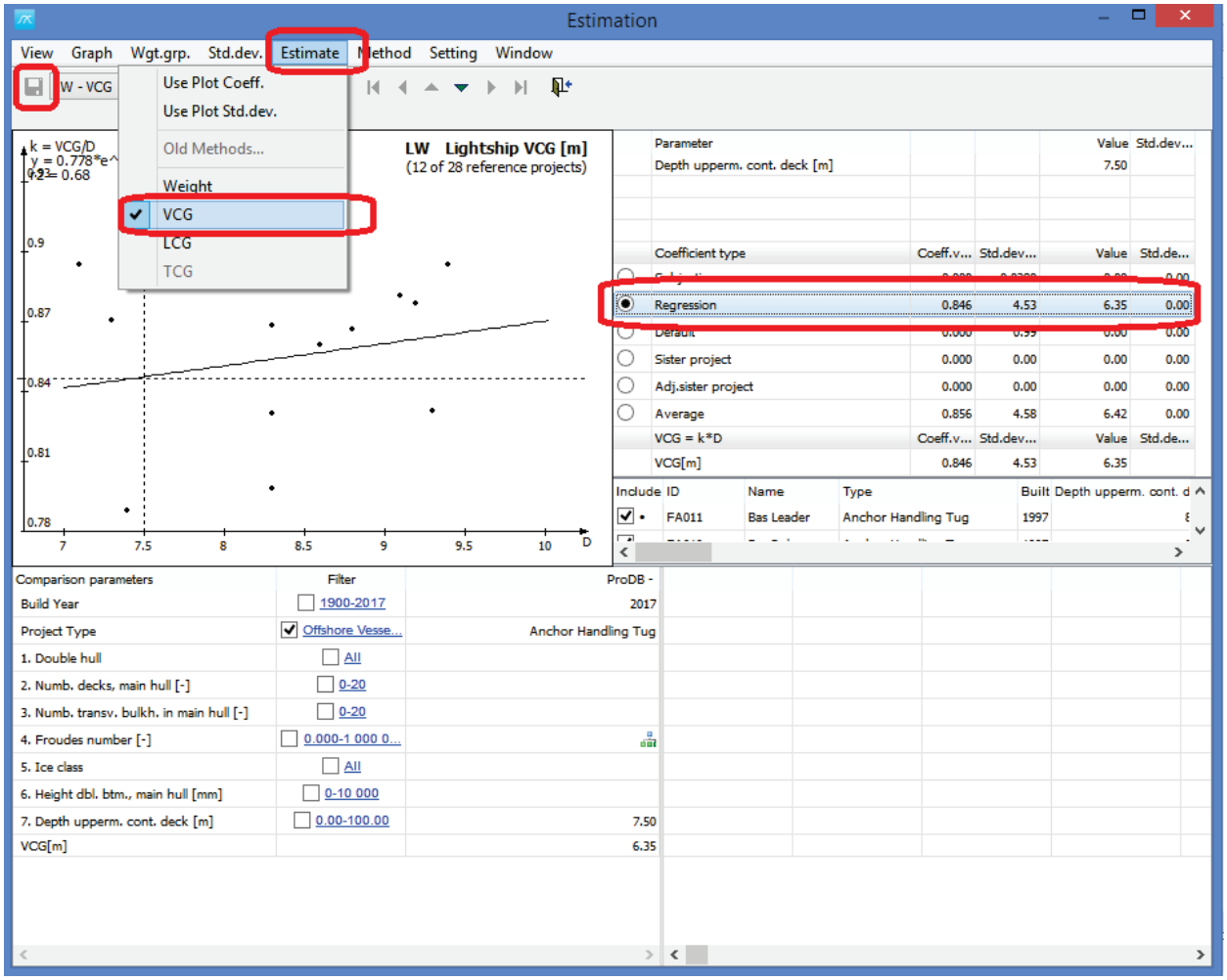
Select the “LW – Ligthship” group in the main window WBS and clikc the estimation graph button in the toolbar to open the estimation window. We are now ready to estimate the Ligthship.

Step 7: Estimate Lightship Weight



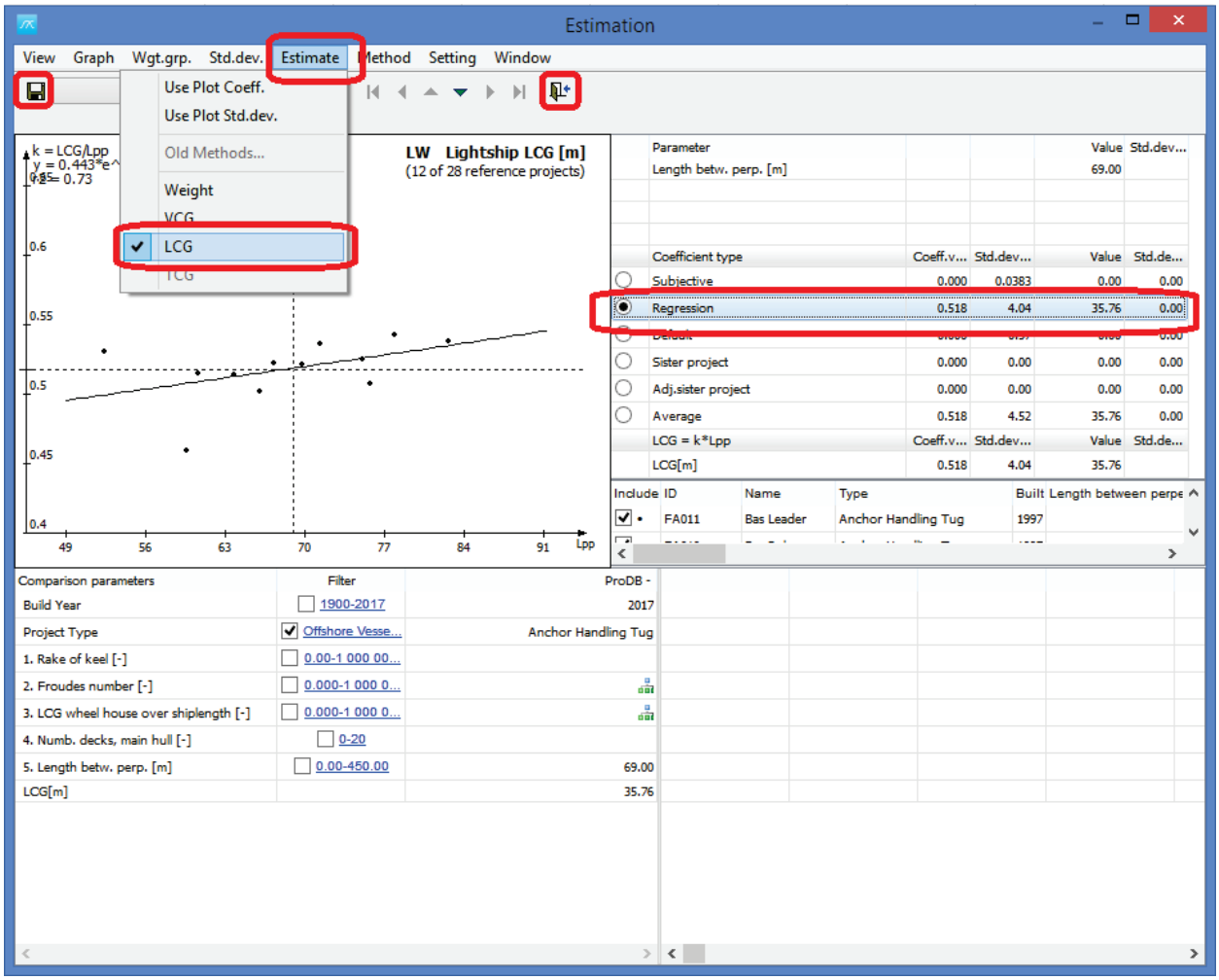
In the graph window, select the “Regression” radiobutton to execute an estimation based upon selecting a coefficient for the method from the regression line. Next, click the “Save” button to save your initial Lightship estimate.

Step 8: Estimate Lightship VCG



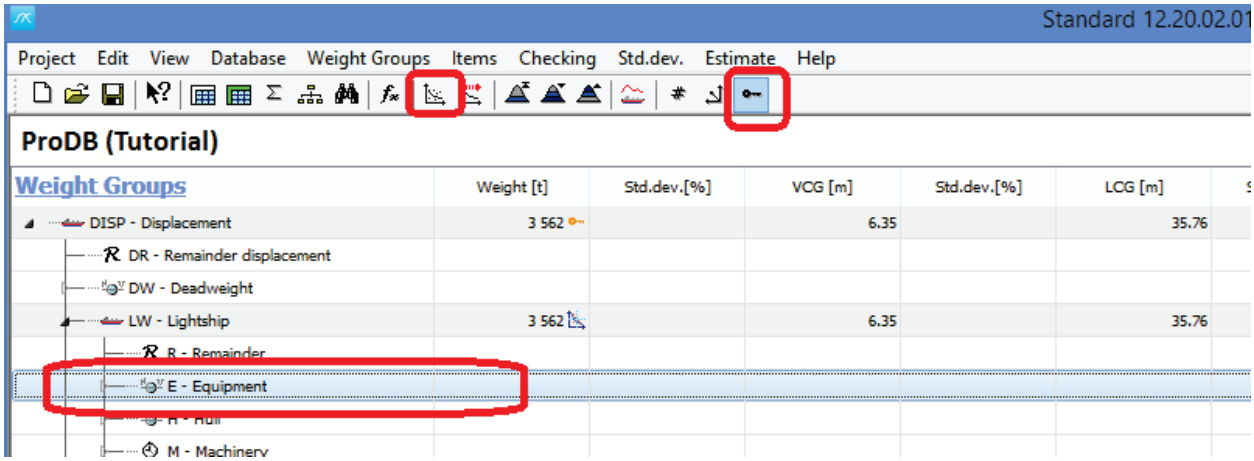
Go to the “Estimate” menu in the Estimation window and select “VCG” to start estimating the initial LightShip VCG value. Selct the “Regression” radiobutton to estimate the VCG value for the lightship and hit the “Save” button on the toolbar to save.

Step 9: Estimate Lightship LCG



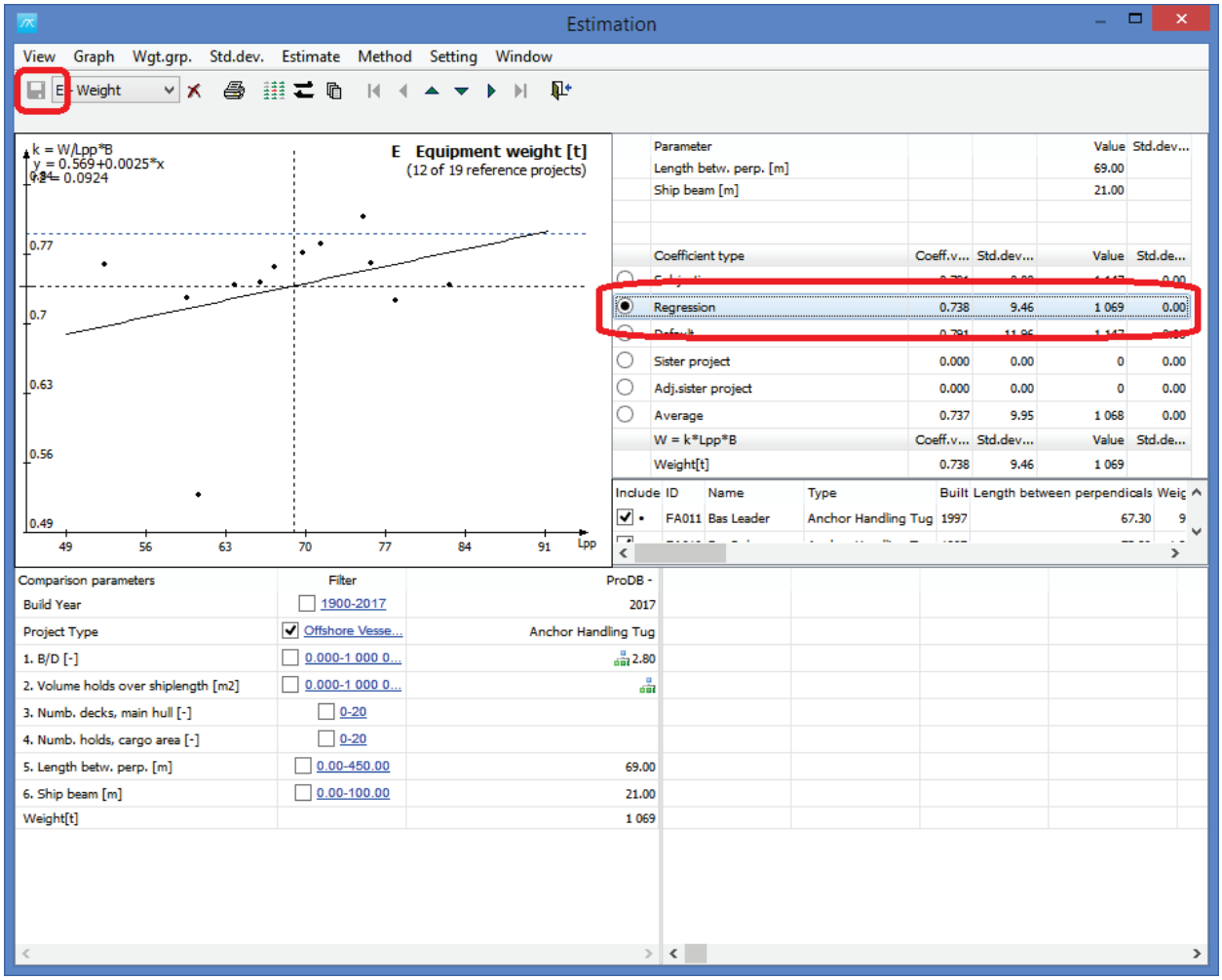
Repeat the same steps as above, but now for selecting the LCG instead of VCG, and after this, close the window by clicking the Close (Door) button on the toolbar.

Step 10: Lock Lightship Estimate and Select Subgroup



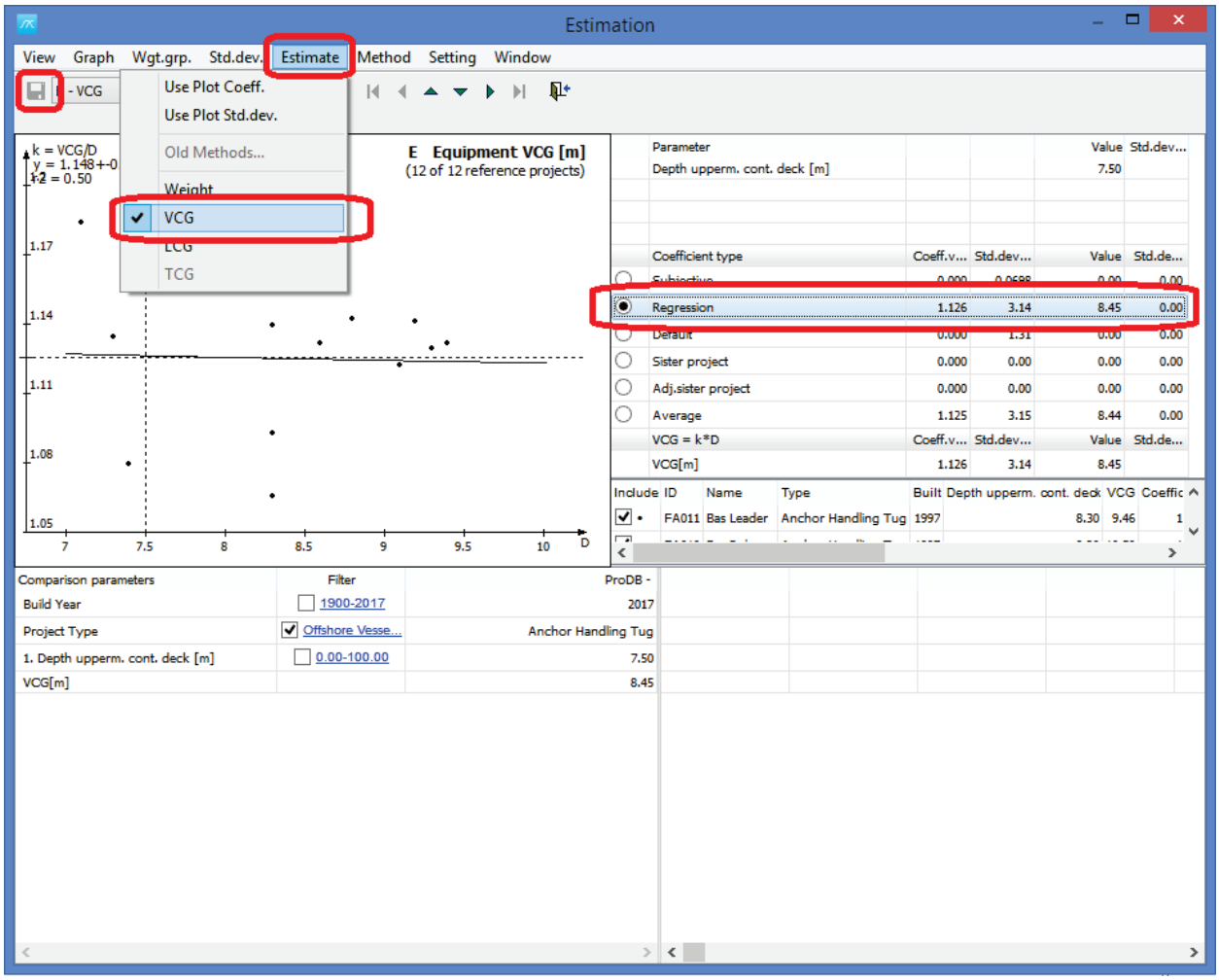
You should now see the results of the Lightship estimation in the main window. Click the Lock (key) button on the right end of the toolbar to lock the estimated numbers before we go refine the estimate. Next, select the "Equipment" weight groups in the main window and once again click the graph icon on the toolbar to open the Estimation window.

Step 11: Estimate Weight of Equipment Group



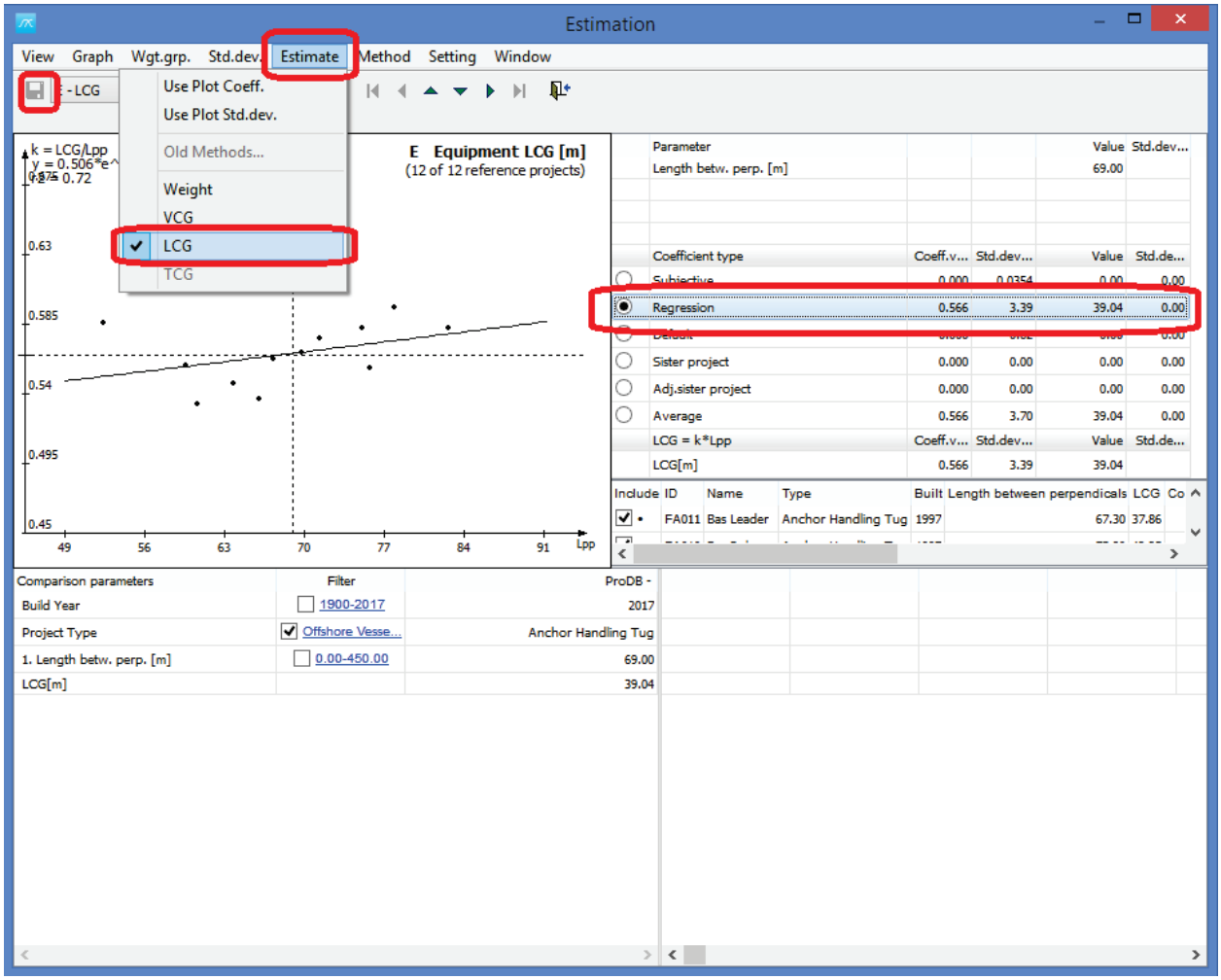
Repeat the steps from the Lightship estimation: Select the “Regression” radiobutton to execute an estimation based upon selecting a coefficient for the method from the regression line. Next, click the “Save” button.

Step 12: Estimate VCG of Equipment Group



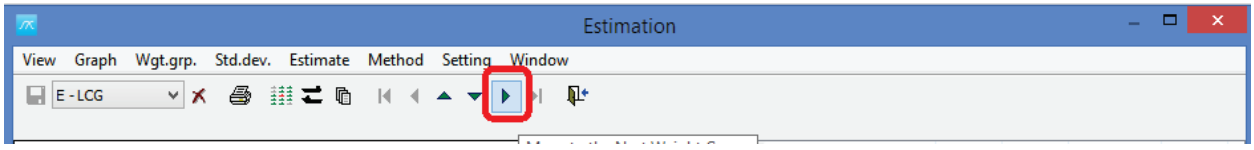
Repeat the steps from the Ligthship VCG estimation: Go to the “Estimate” menu in the Estimation window and select “VCG” to start estimating the initial Equipment VCG value. Select the “Regression” radiobutton to estimate the VCG value for the equipment and hit the “Save” button on the toolbar to save.

Step 13: Estimate LCG of Equipment Group



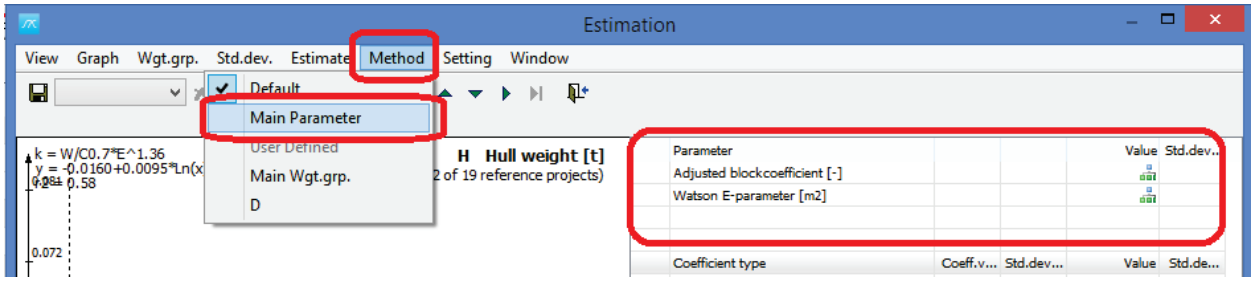
Repeat the steps from the Ligthship LCG estimation: Go to the “Estimate” menu in the Estimation window and select “LCG” to start estimating the initial Equipment LCG value. Select the “Regression” radiobutton to estimate the LCG value for the equipment and hit the “Save” button on the toolbar to save.

Step 14: Move to Hull Group



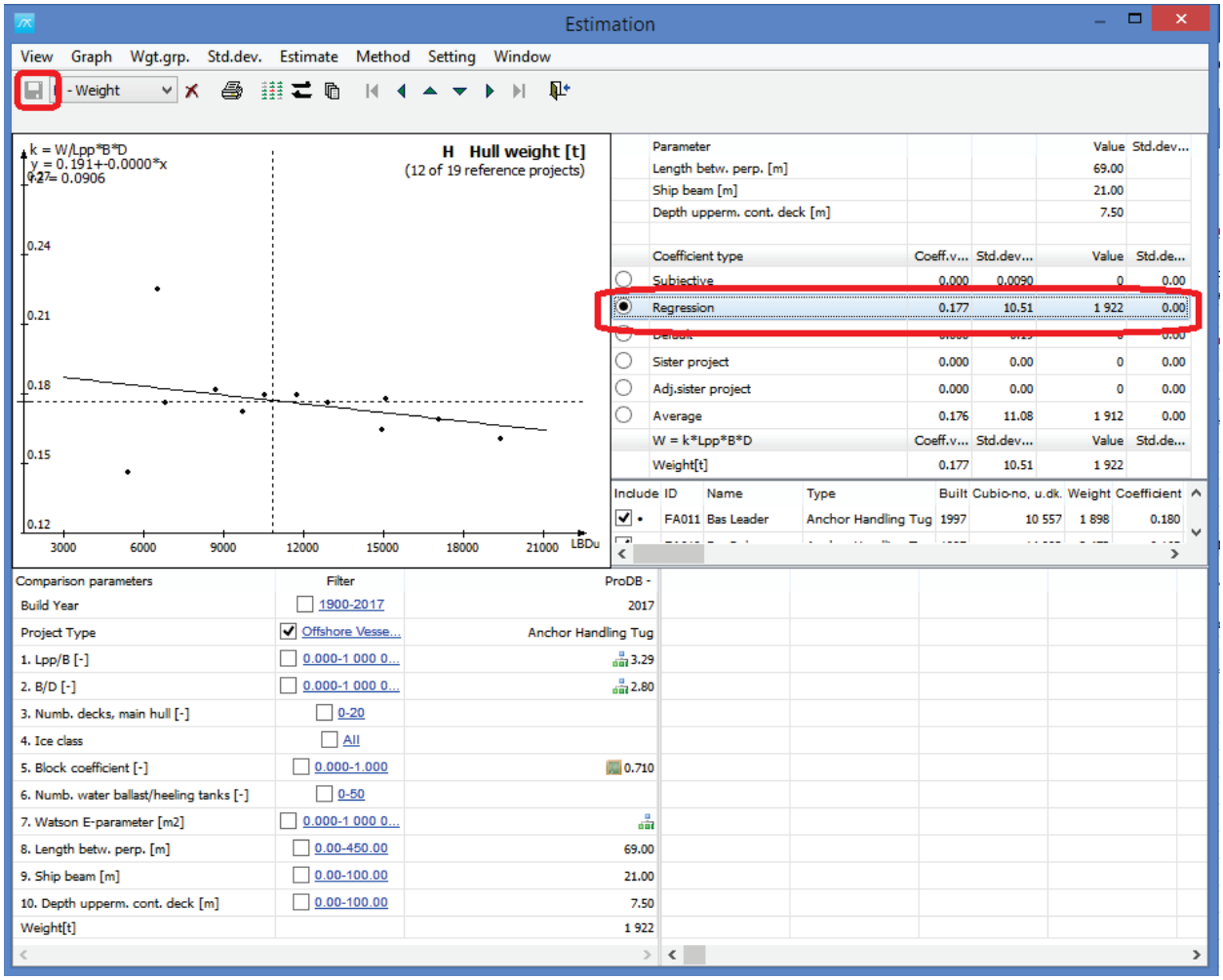
Click the toolbar button with the right arrow as marked above to move to the next weight group on the same level (Hull) without closing the estimation Window.

Step 15: Change Weight Estimation Formula for Hull



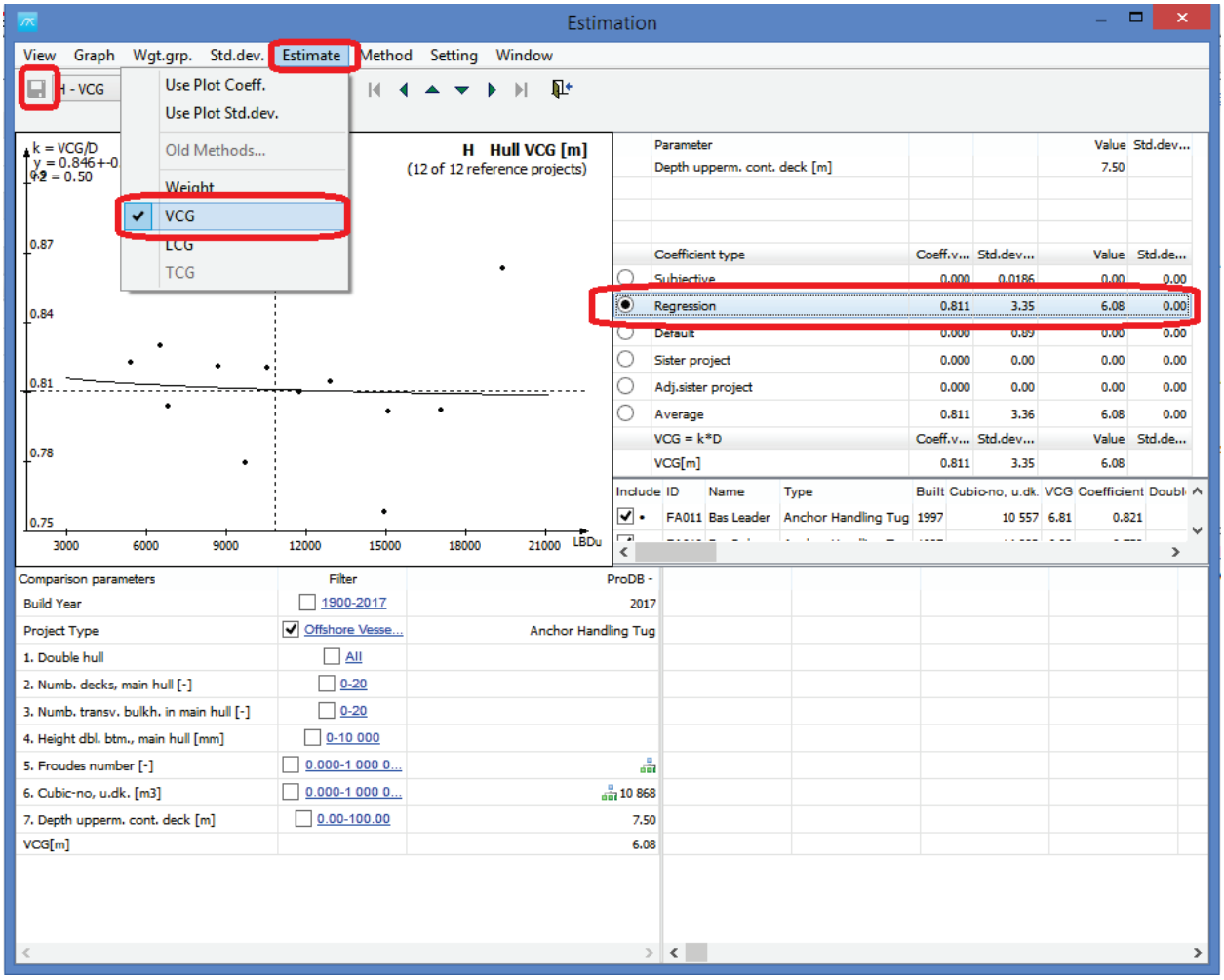
In the Hull weight group the standard formula is using the Watson E-parameter. We do not have the details at hand to fill this in, so instead we will change formula. Go to the "Method" menu and select Main Parameter as the method to use instead of the Default method. The method will now change to a formula only containing the main parameters and we do not have to enter more information to carry out the estimation.

Step 16: Estimate the Hull Weight



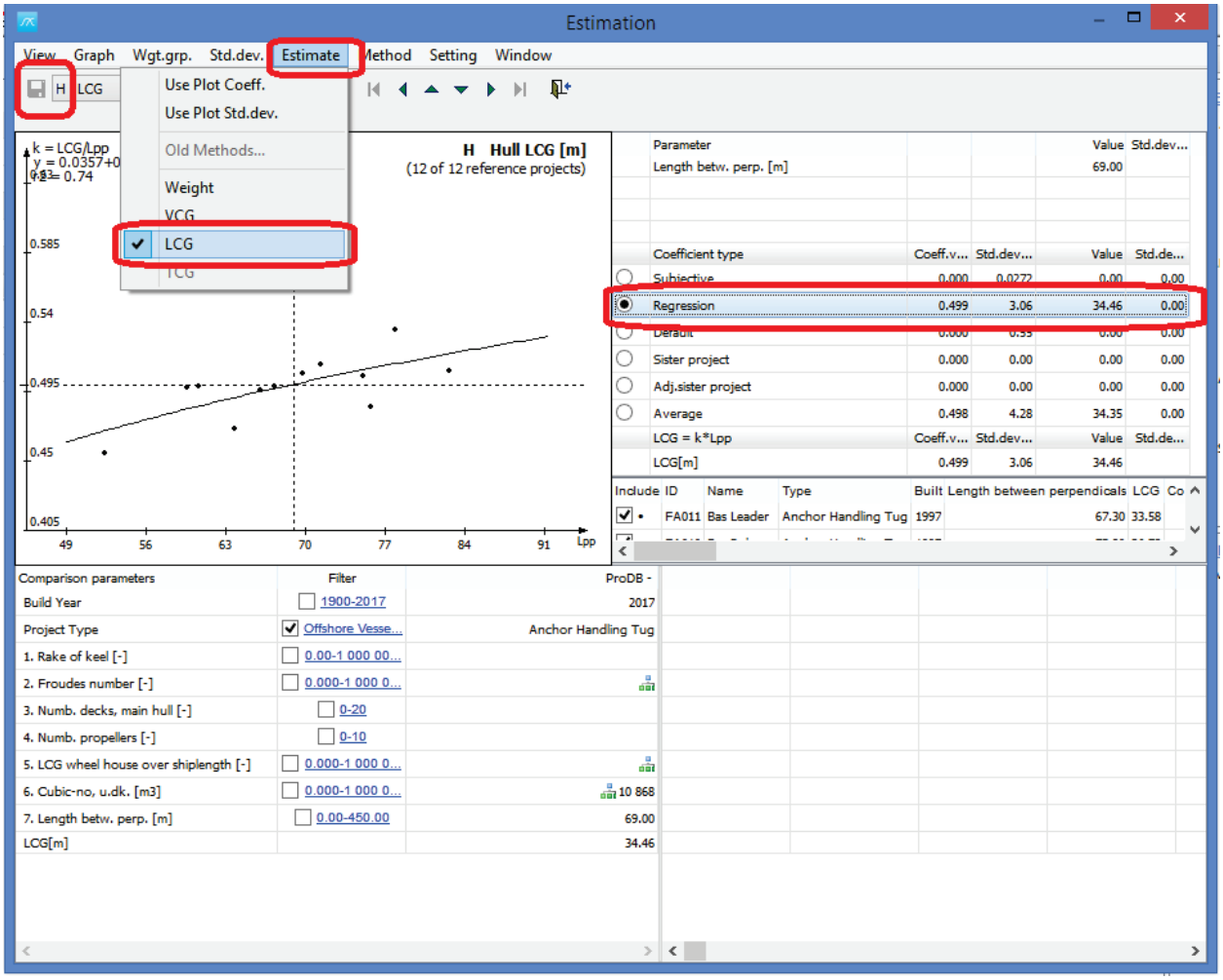
Now estimate the Hull weight by selecting the "Regression" radiobutton and save the result.

Step 16: Estimate the Hull VCG



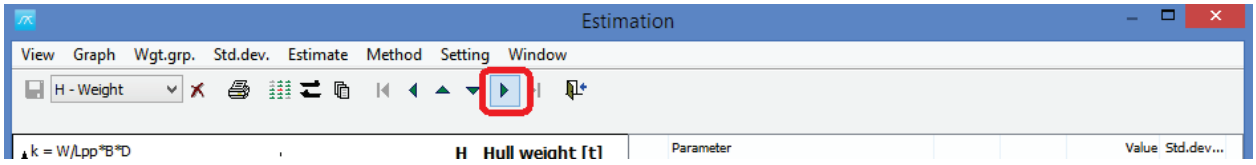
Next, switch to VCG estimation from the Estimate menu and carry out this estimation by again selecting the ”Regression” coefficient and finally again save the result.

Step 17: Estimate the Hull LCG



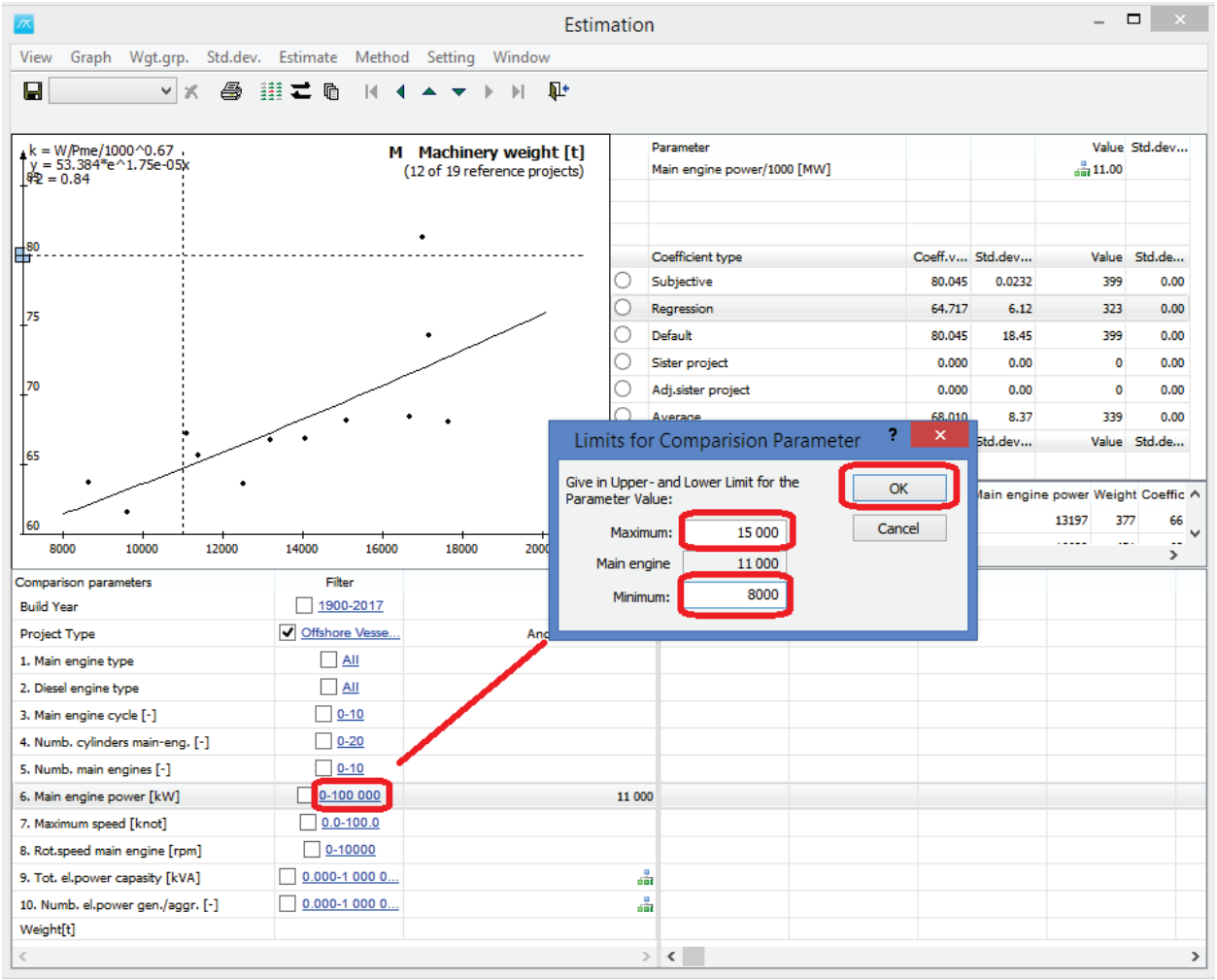
Repeat the steps you just did for the VCG estimation, only this time for the LCG.

Step 18: Move to Machinery Group



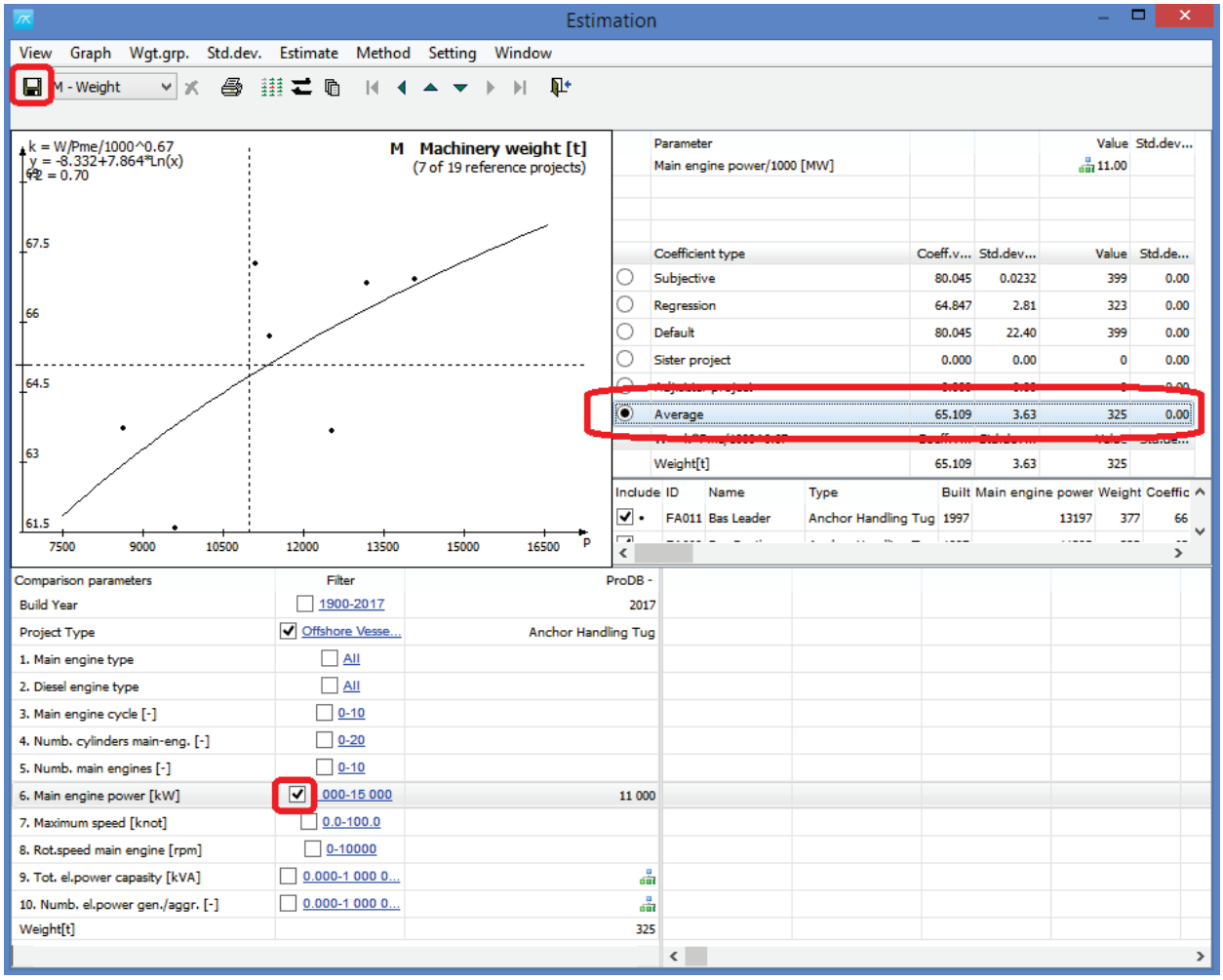
Click the toolbar button with the right arrow as marked above to move to the final weight group on the same level (Machinery) without closing the estimation Window.

Step 19: Set Power Range Limit to Filter Projects



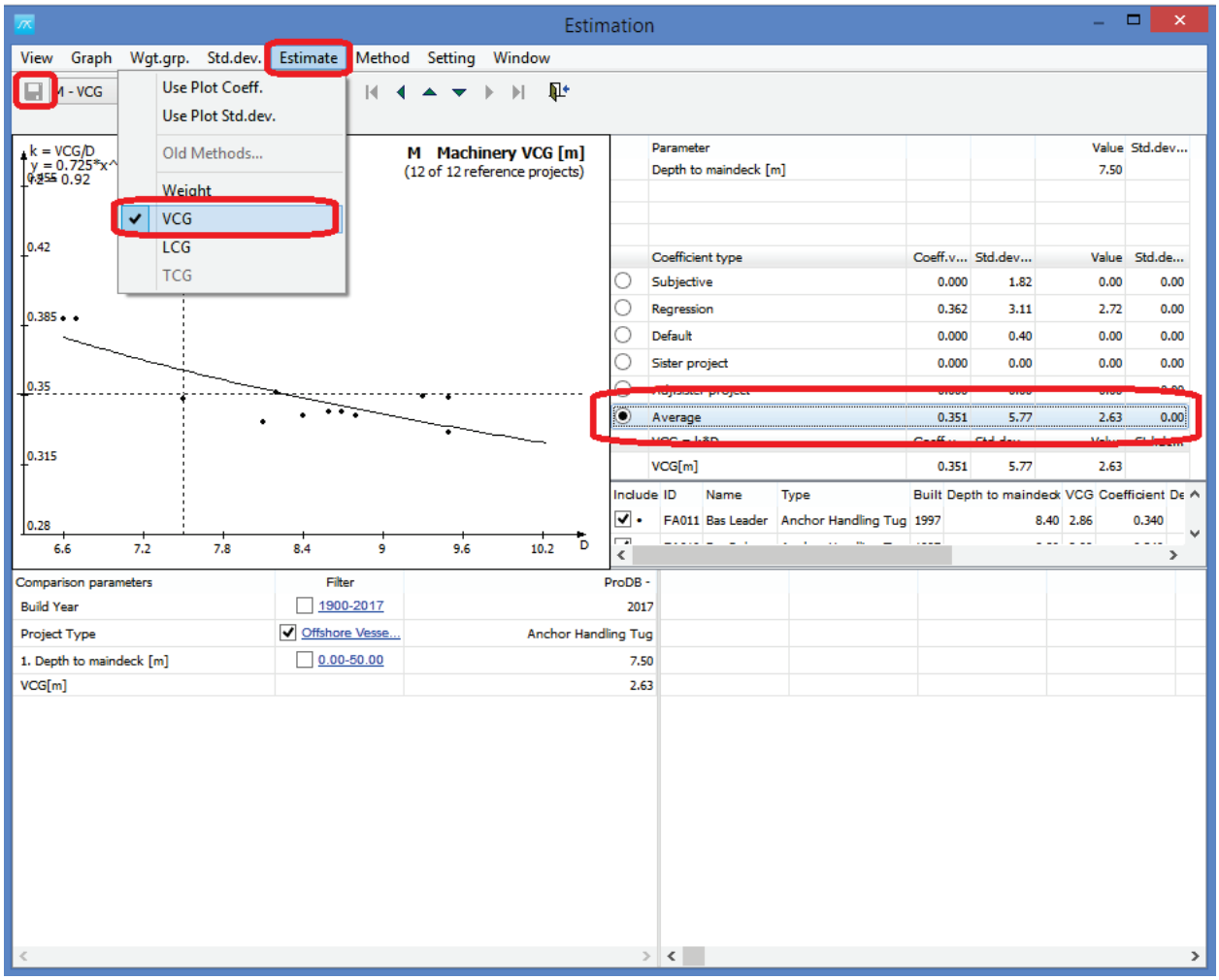
In the Machinery group, click the hyperlink next to the “Main engine power” parameter and in the pop-up window, set 15000 as maximum power and 8000 as minimum power as range for the propulsion data to be plotted in the graph. Hit OK button to close window.

Step 20: Estimate Machinery Weight



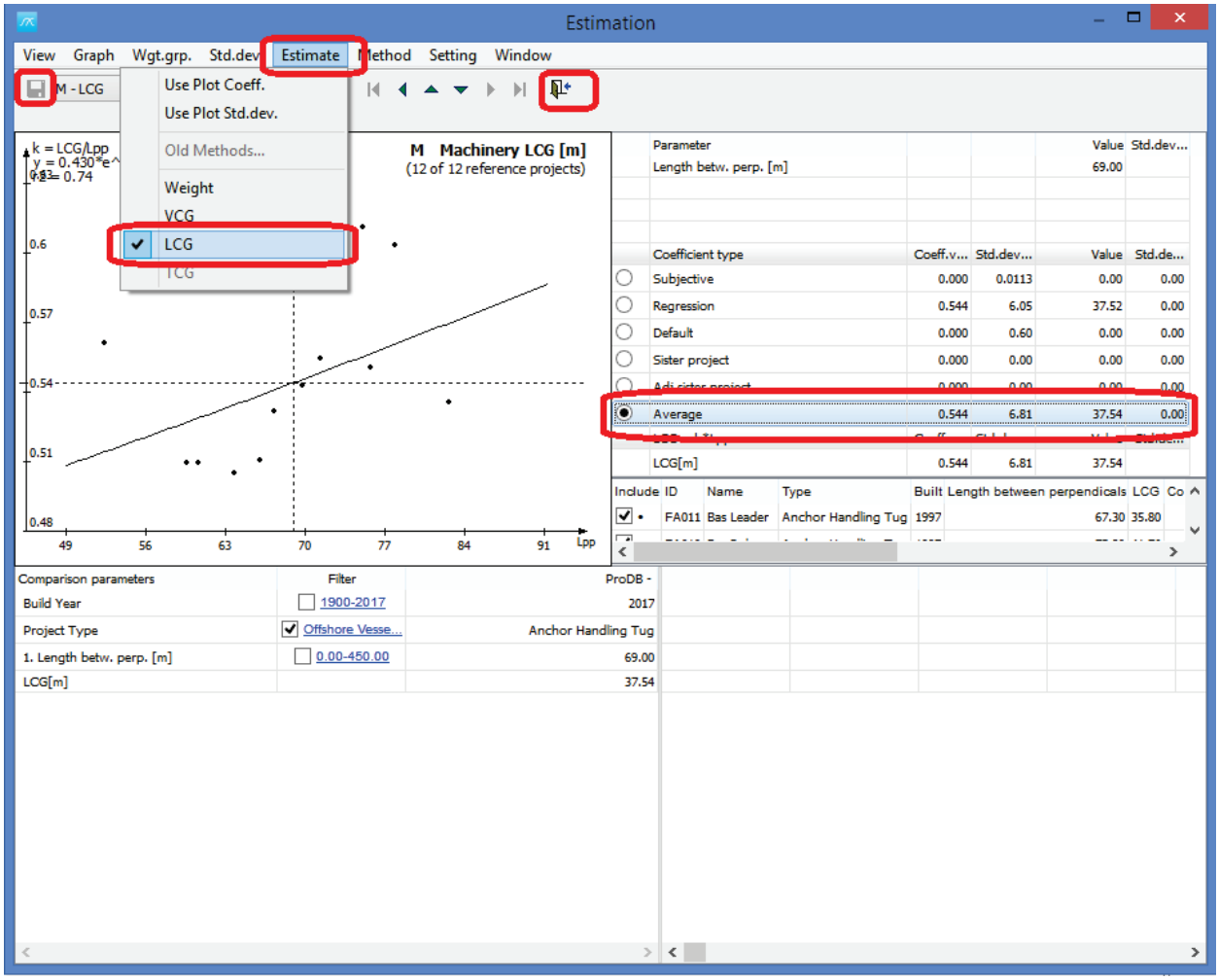
Check the checkbox to the left of the hyperlink where you just set the range for Main engine power to activate this as a filter for the projects plotted in the graph. Click the “Average” radiobutton to select the coefficient to be used in the estimation and to calculate the Machinery weight. Save the result.

Step 21: Estimate Machinery VCG



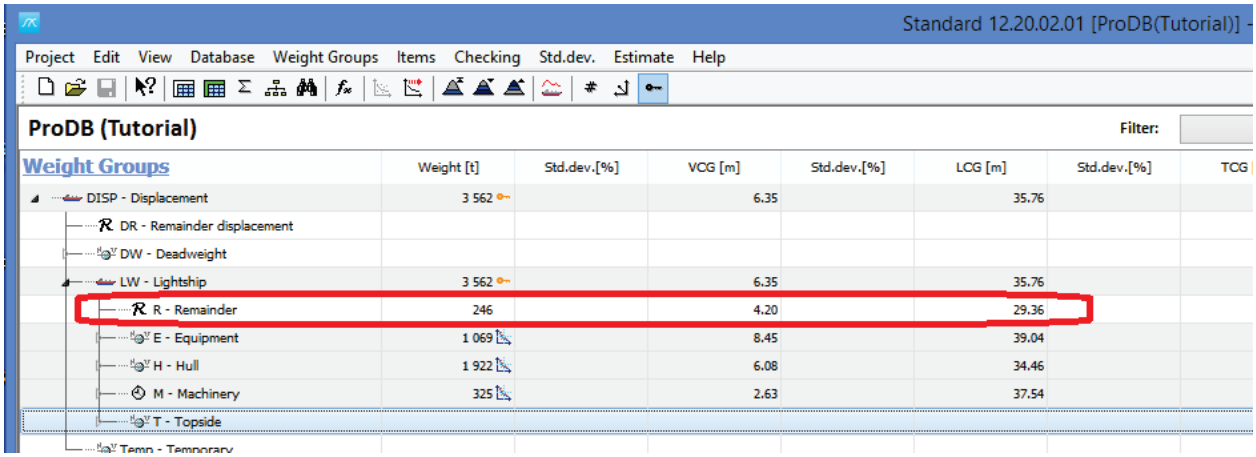
Go to the “Estimate” menu and carry out the estimation for the VCG by selecting again the “Average” coefficient. Save the result.

Step 22: Estimate Machinery LCG



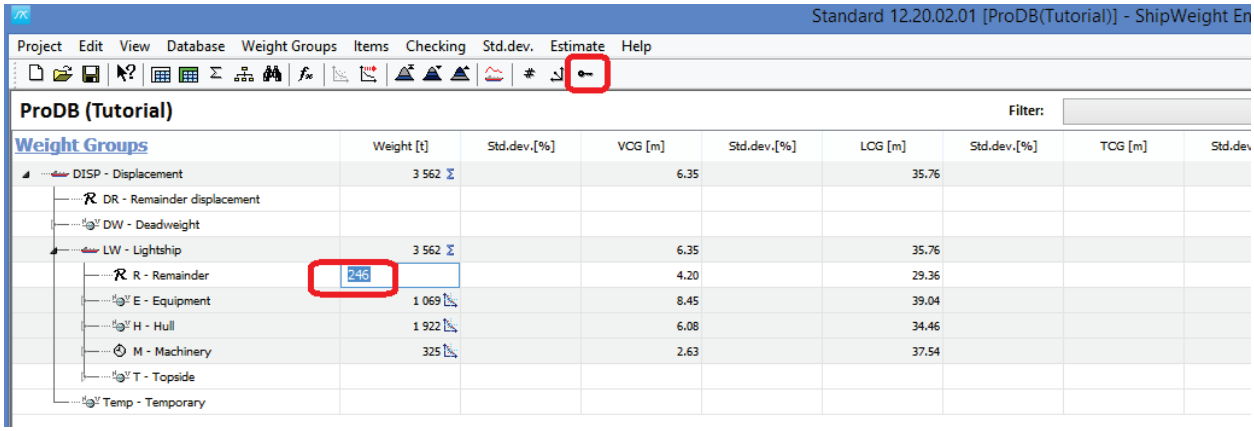
Carry out LCG estimation in similar fashion as for VCG, but in addition, after saving, close the Estimation window by clicking the Close button (door) in the toolbar.

Step 23: Check Results from Subgroups



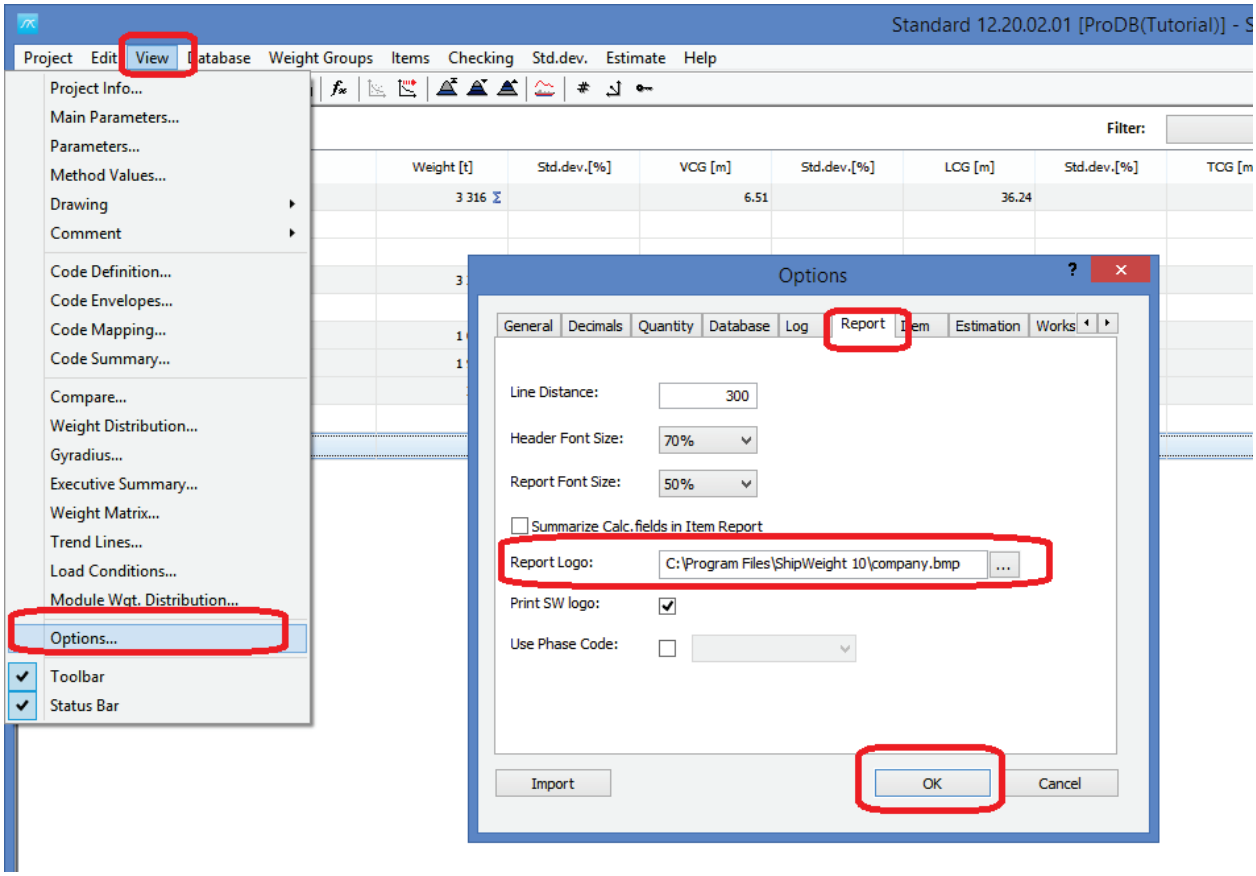
You should now see the results of your estimation of the sublevels. However, not the value in the "Remainder" group as this automatically gets the deviation between your initial estimation and the sum of the sublevel group estimations. This is because you locked the results after the Lightship estimate.

Step 24: Remove the Remainder Value



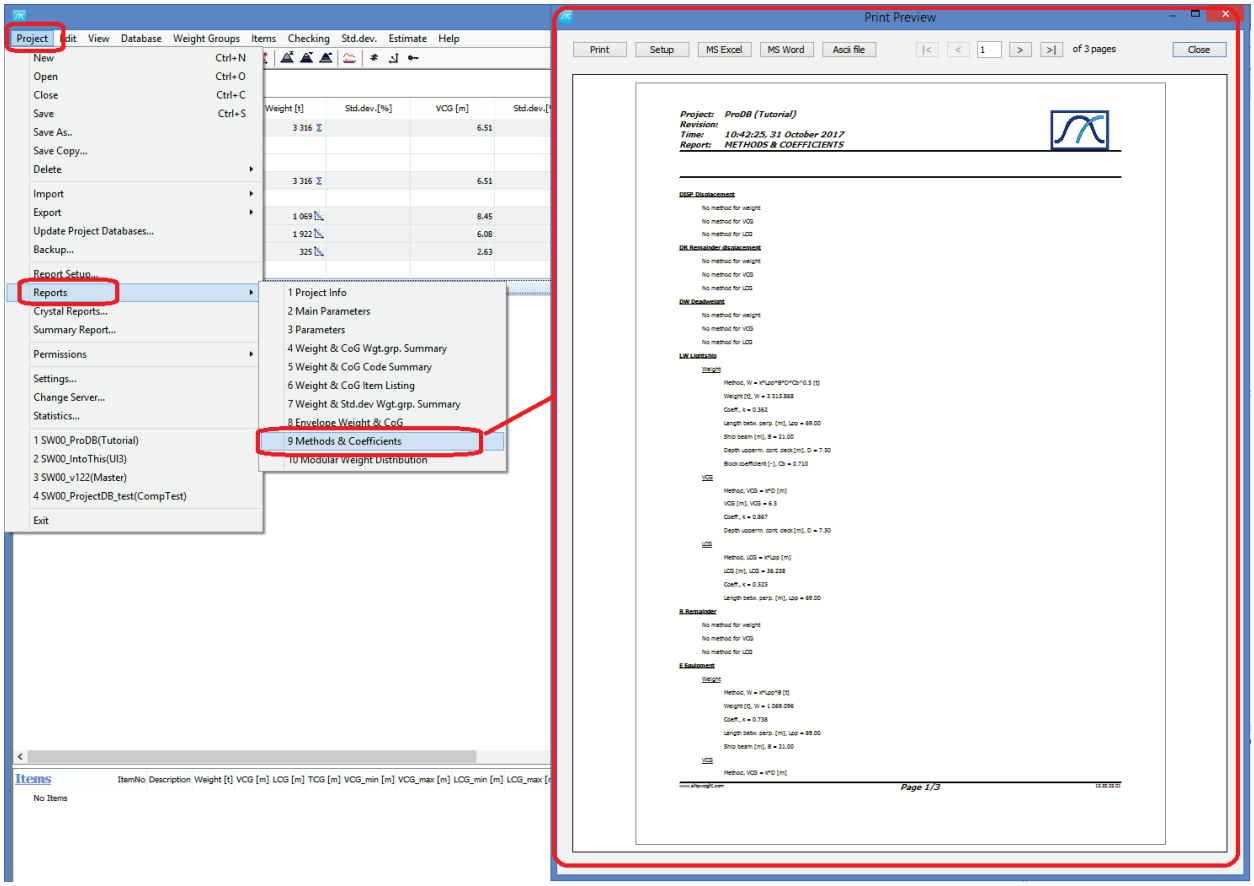
Unlock the results and delete the Remainder value by clicking on the Remainder weight grid to get it to edit modus and delete the weight value. The results of the Lightship will after this become the sum of the subgroups.

Step 25: Select Your Company Logo for Reports



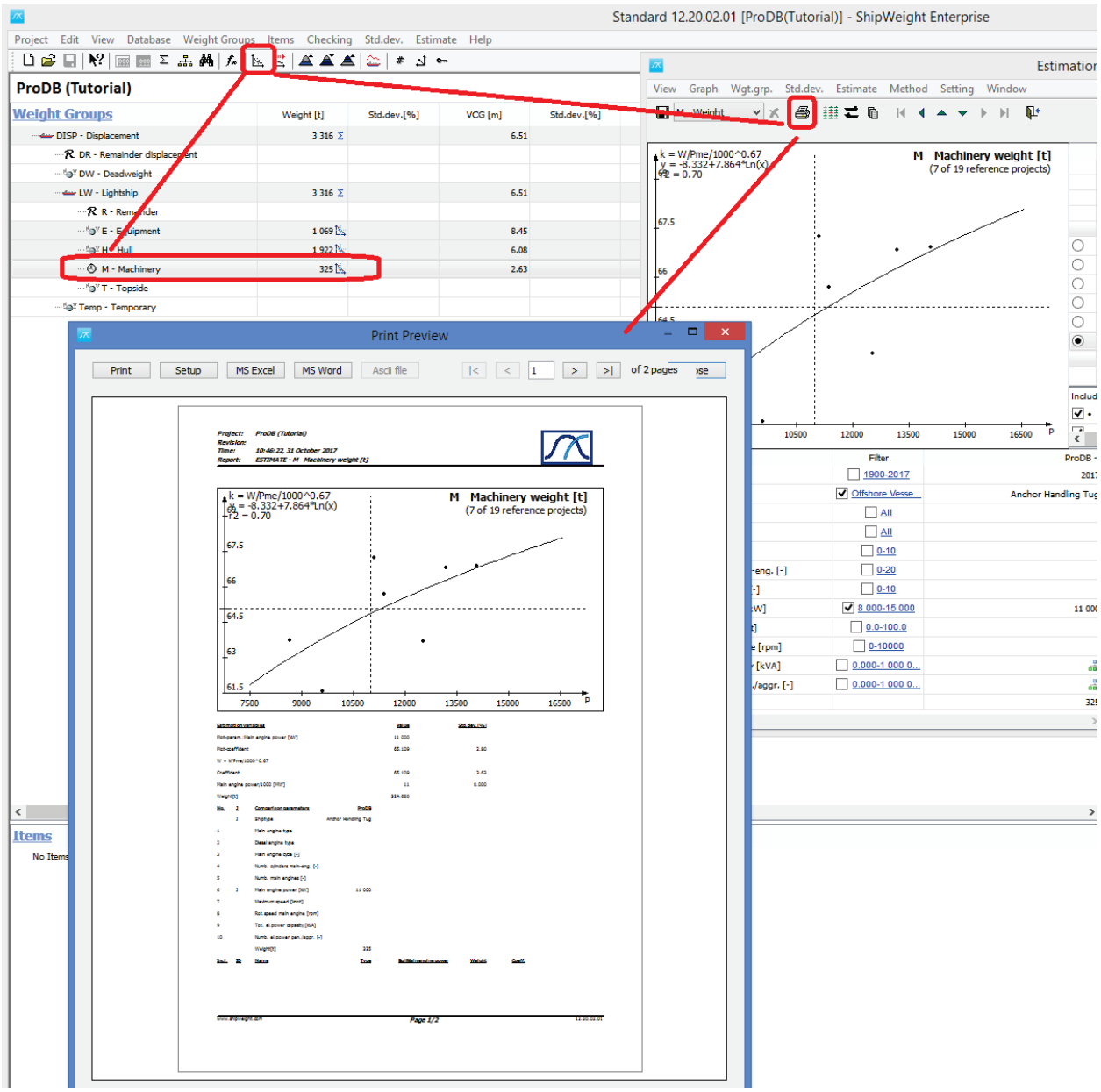
Go to the View menu and open the Options window. Select the “Report” tabsheet and click the browse button […] to select a company logo file. Hit the OK button.

Step 26: Print a Result Report



Go to the Project menu, select submenu Reports and select submenu item for report number 9 – “Methods and Coefficients” to produce a report of the estimation you have just finished.

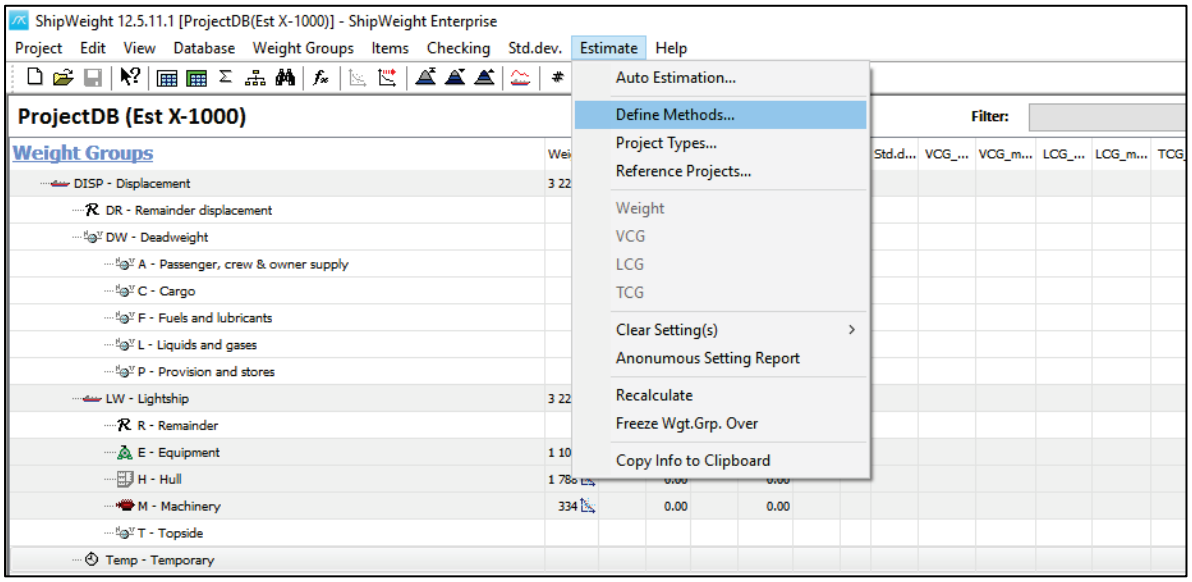
Step 27: Print a Detailed Report



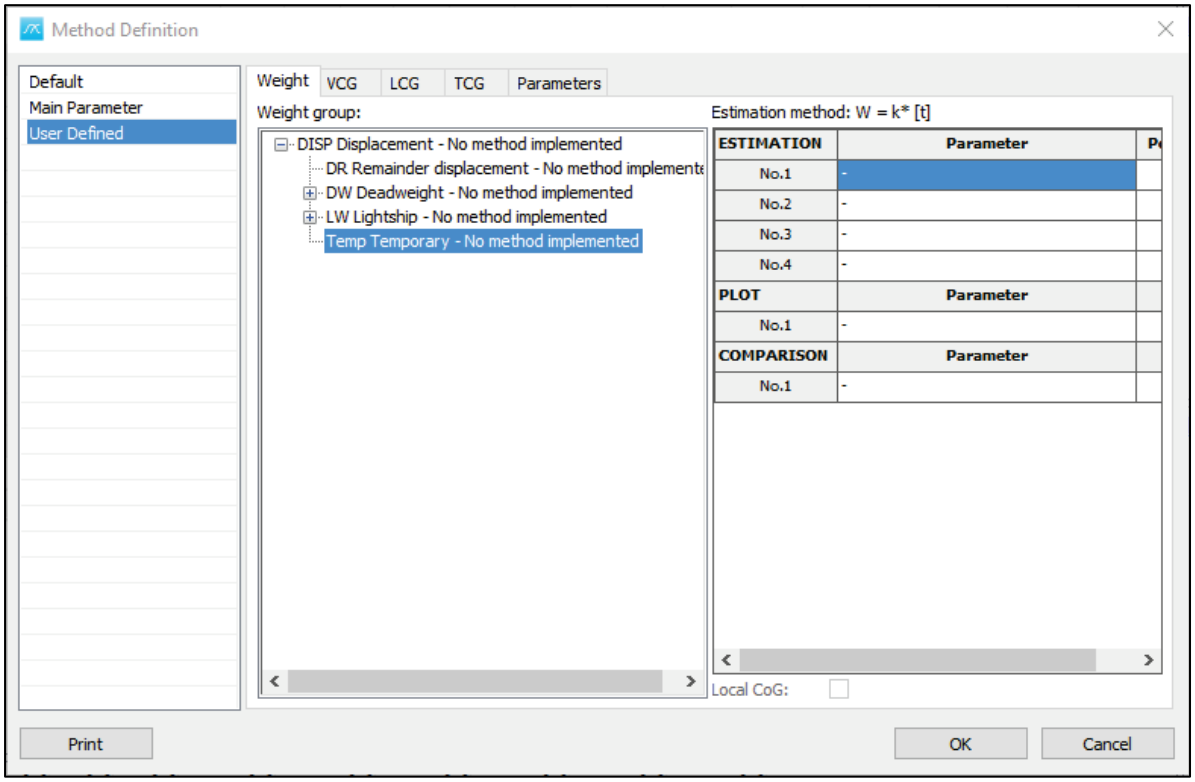
To produce more background information about a specific estimation, select the weight group in the main window, open the estimation window from the toolbar and click the “Print” button. This will produce a more detailed report for the estimation of a particular weight group.

Some Additional Parametric Estimation Topics

On the menu **Estimate**, click **Define Methods…**



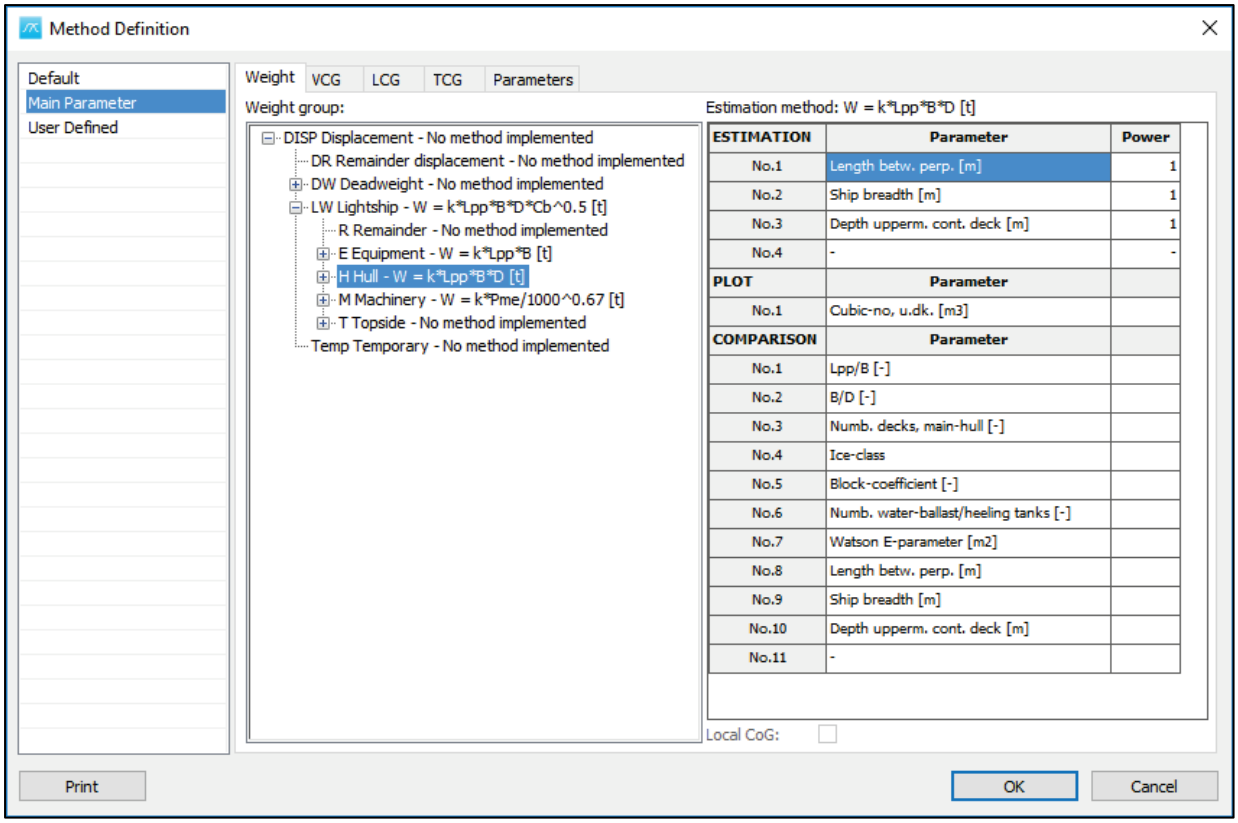
The Method Definition window window will show up:



The area to the left contains the Default parameters. Select **Main Parameter** as Default.

The area in the middle contains the work breakdown structure. In this area, use the mouse to select the weight group **Hull**.

The method for this weight group will be shown in the area to the right.



You want the method for Hull to be W=k*Lpp*B*D and plot the coefficient against ship length. Select the estimation parameters and click once more, to reveal a combo box. Select – on top of the list to clear the parameter.

Select the plot parameter and delete it. Leave the comparison parameters as they are. Under ESTIMATION, select a "length parameter" (e.g. Length betw. perp) in the combo box for No.1. Add breadth and depth parameters in same way (e.g. Ship breadth and Depth upperm. cont. deck). Set the Power parameters to be 1, 1 and 1.

Under PLOT, select the "length parameter" again in the right area and click ADD button. Now you are done, select the OK button.

To be able to use your own method do the following: Enter the main estimation window window in the weight group H Hull. From the menu Method select User defined. Now your own method will be applied when estimating.

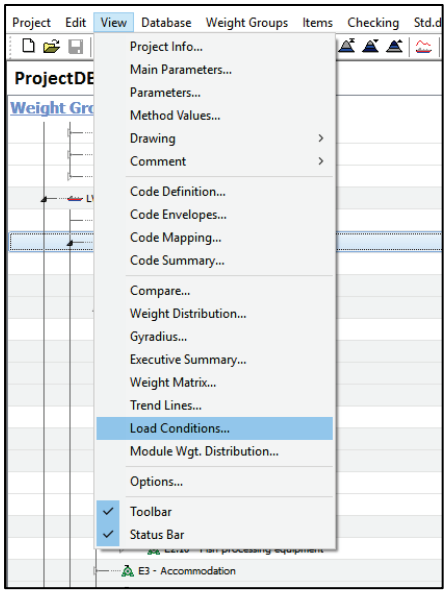
Loading Conditions, Hydrostatics & Global Filters

This section will look into:

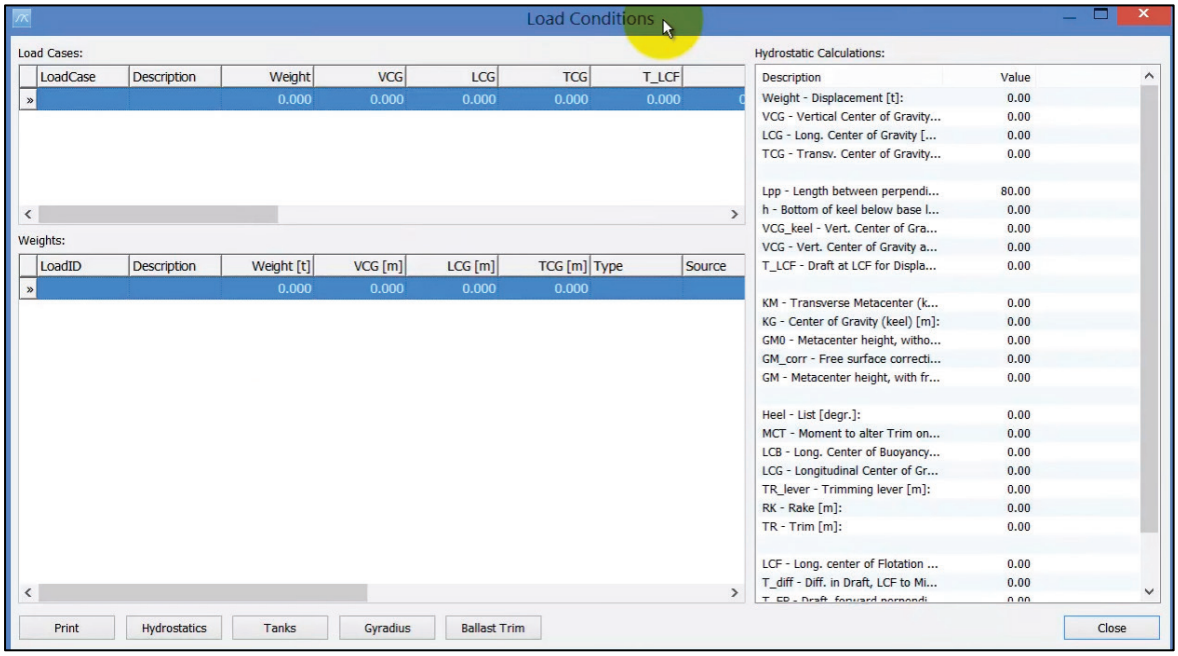
- Defining loading conditions
- Calculating hydrostatics
- Using global filters

Step 1: Open the Loading Condition Window

To start the Loading conditions window, go to View menu and select Load Conditions…

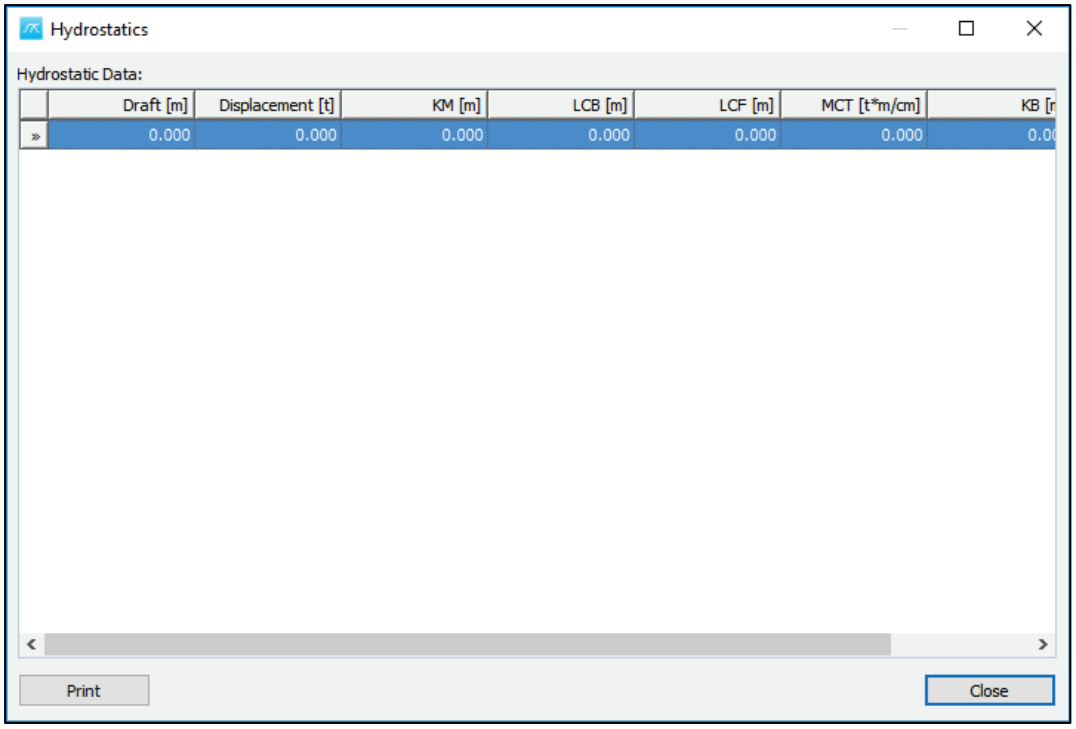


The Load Conditions window will appear:

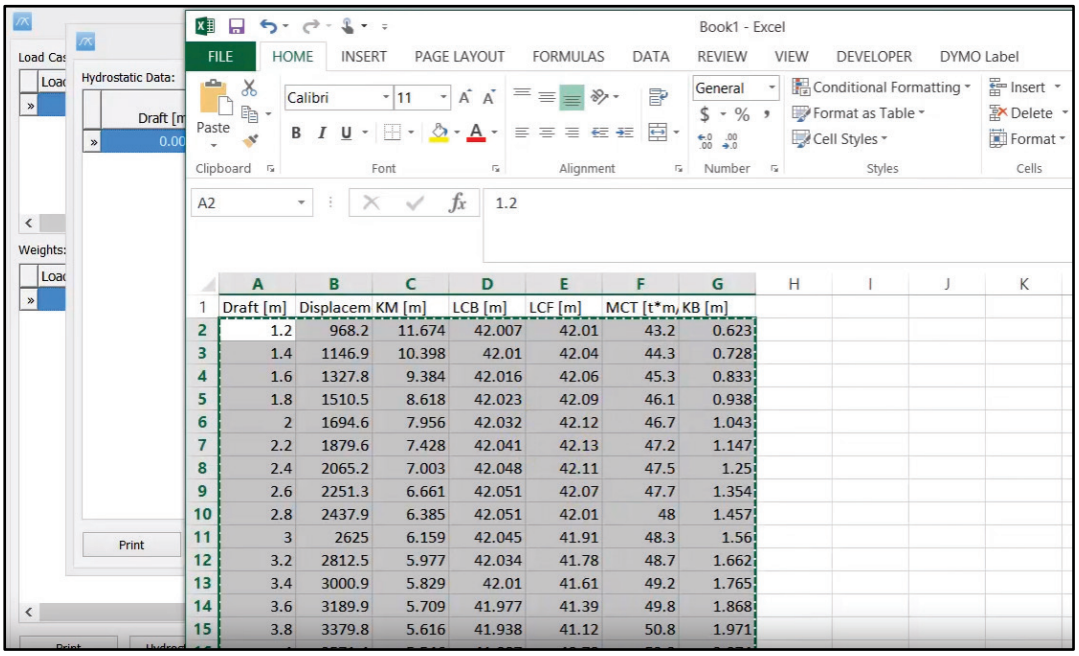


Step 2: Get the Hydrostatics Table into ShipWeight:

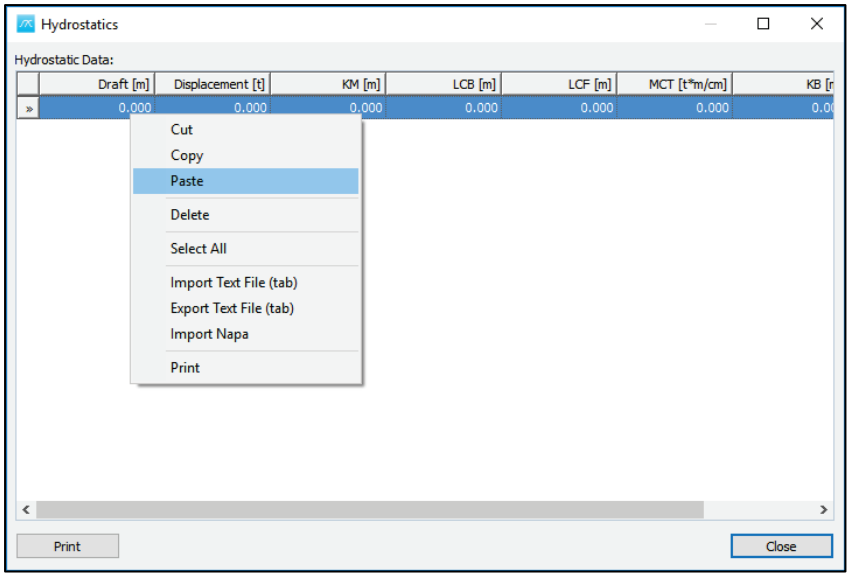
To get the hydrostatics table into ShipWeight, press the Hydrostatics button and this brings up the Hydrostatics window:

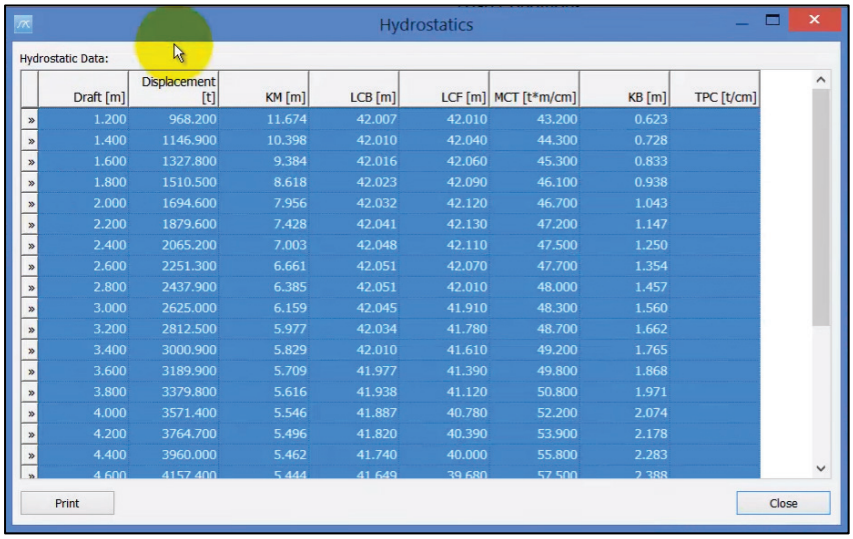


We can input all the needed values or Copy them from Excel (taken from the stability software):



And then Paste them in the Hydrostatics window:

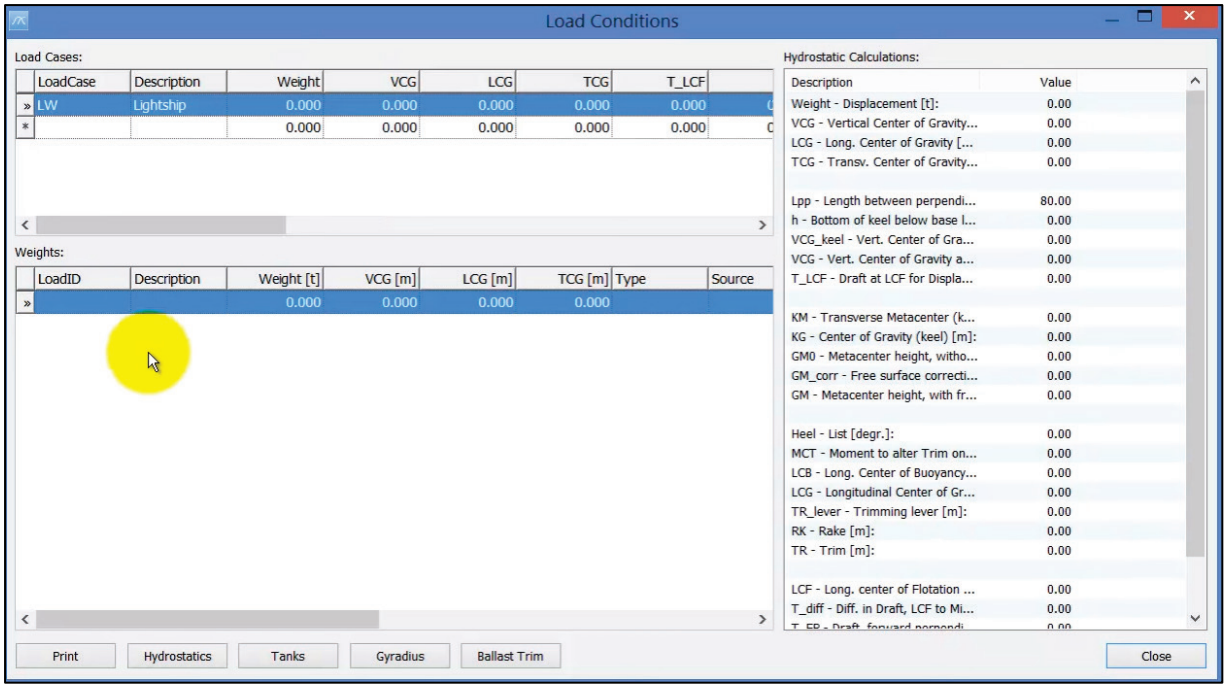




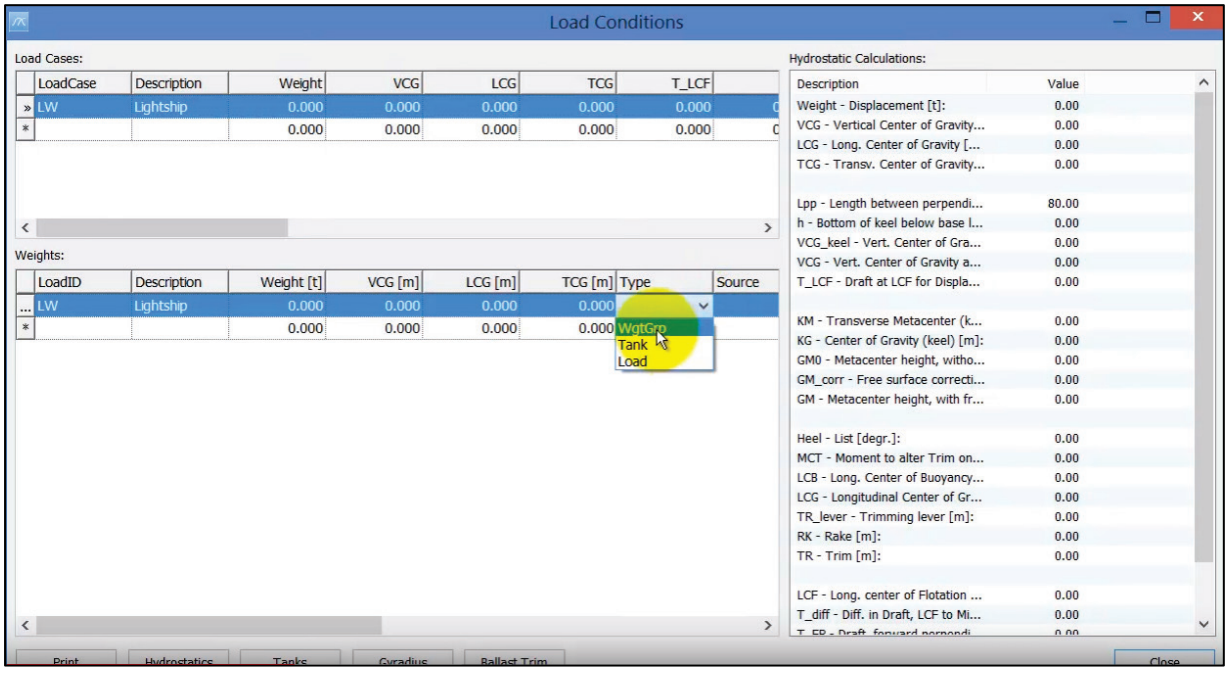
And press Close.

Step 3: Create the Lightship Loading Condition

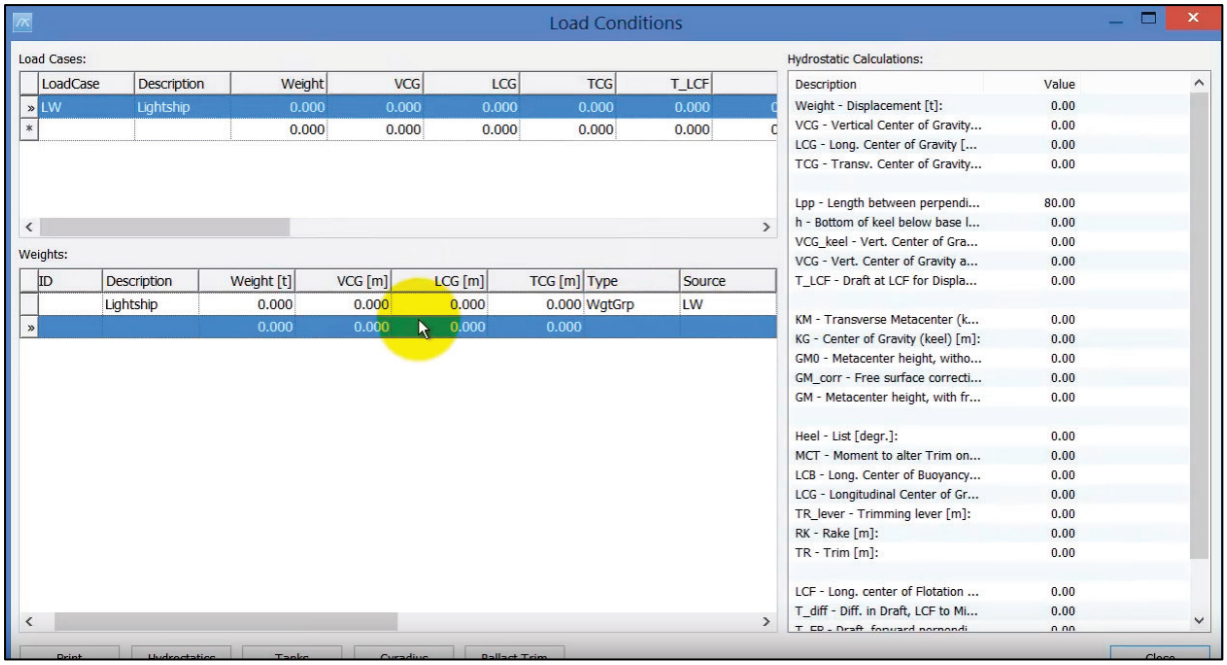
The Loading Conditions are created in the Load Cases area, where each row will define one loading case. Let's start by creating the Lightship condition. Type LW for LoadCase, then Lightship for Description. As always in ShipWeight when you create a new row, go to the row below to make sure this data has been properly registered in the database, then go back to the first row:



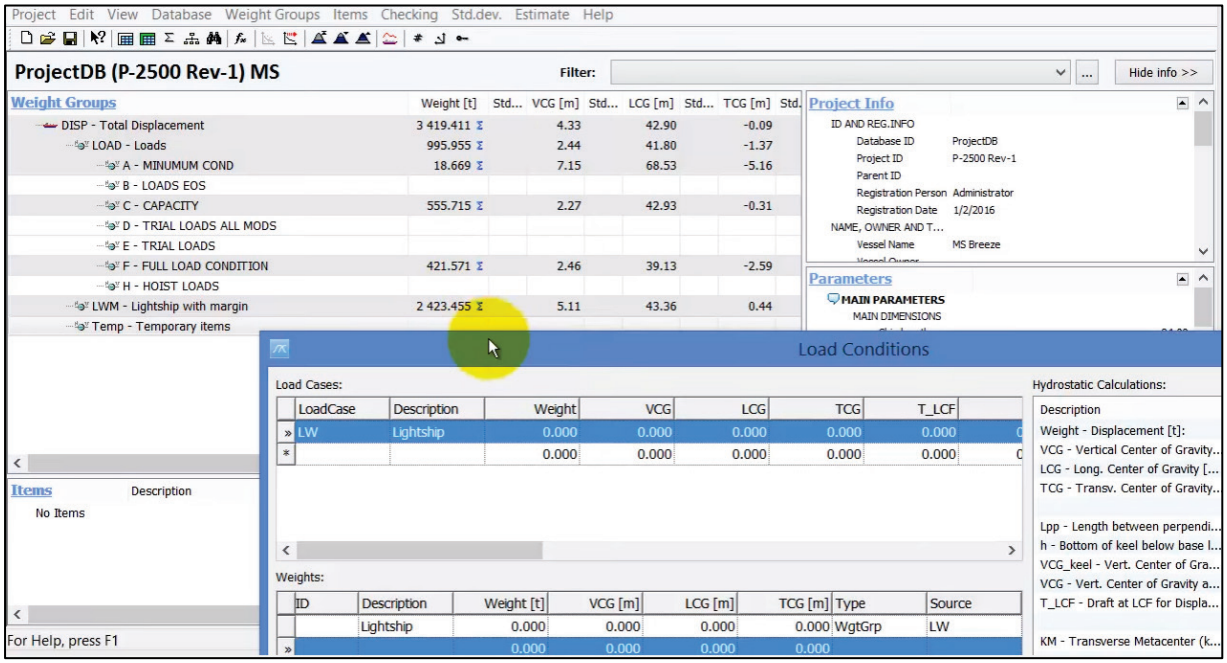
The definition of the lightship condition is done in the Weights area, and since is the lightship only, is just one weight to be defined:



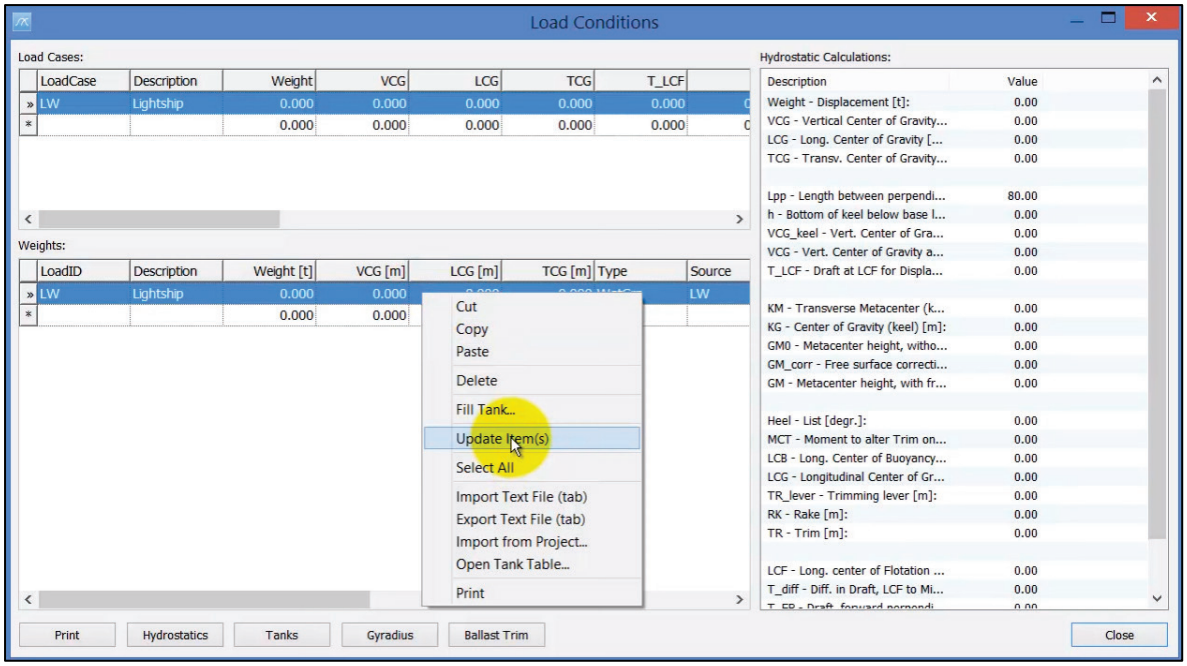
And select LW for Source column:

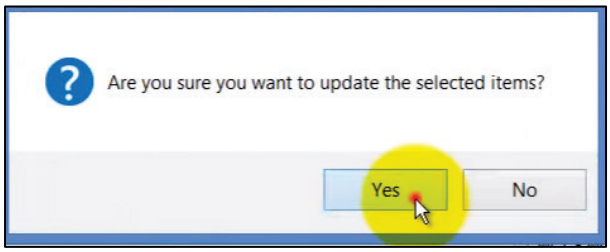


So, we are refering to the weight group Lightship in ShipWeight main window:

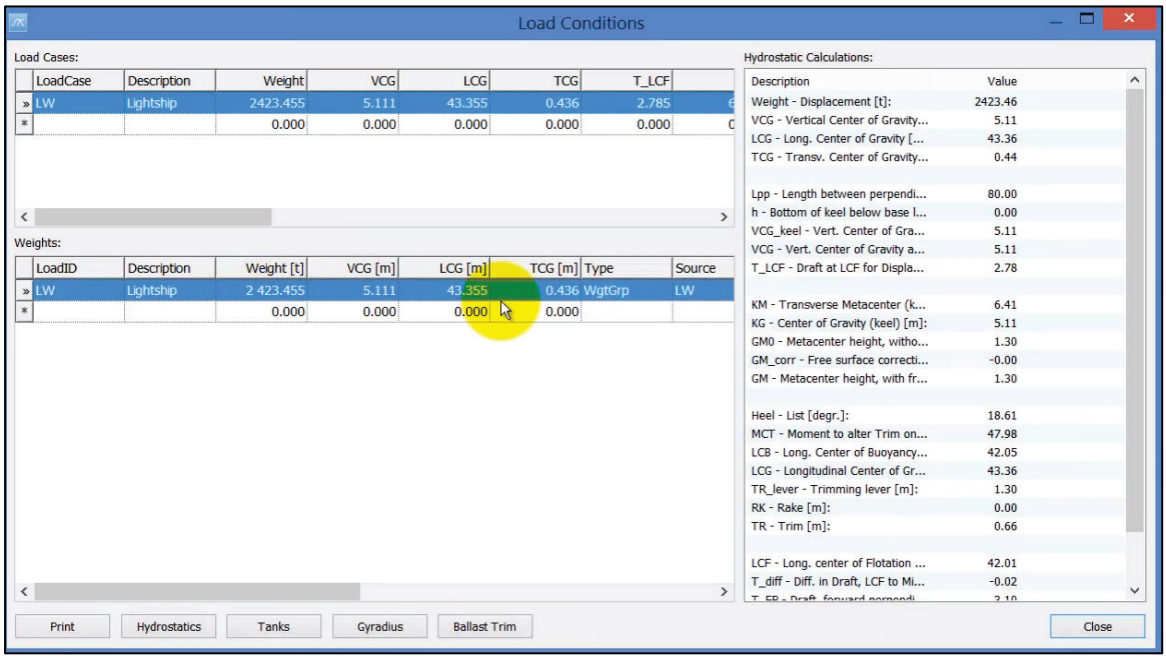


Then right click and select **Update Item(s)** option:

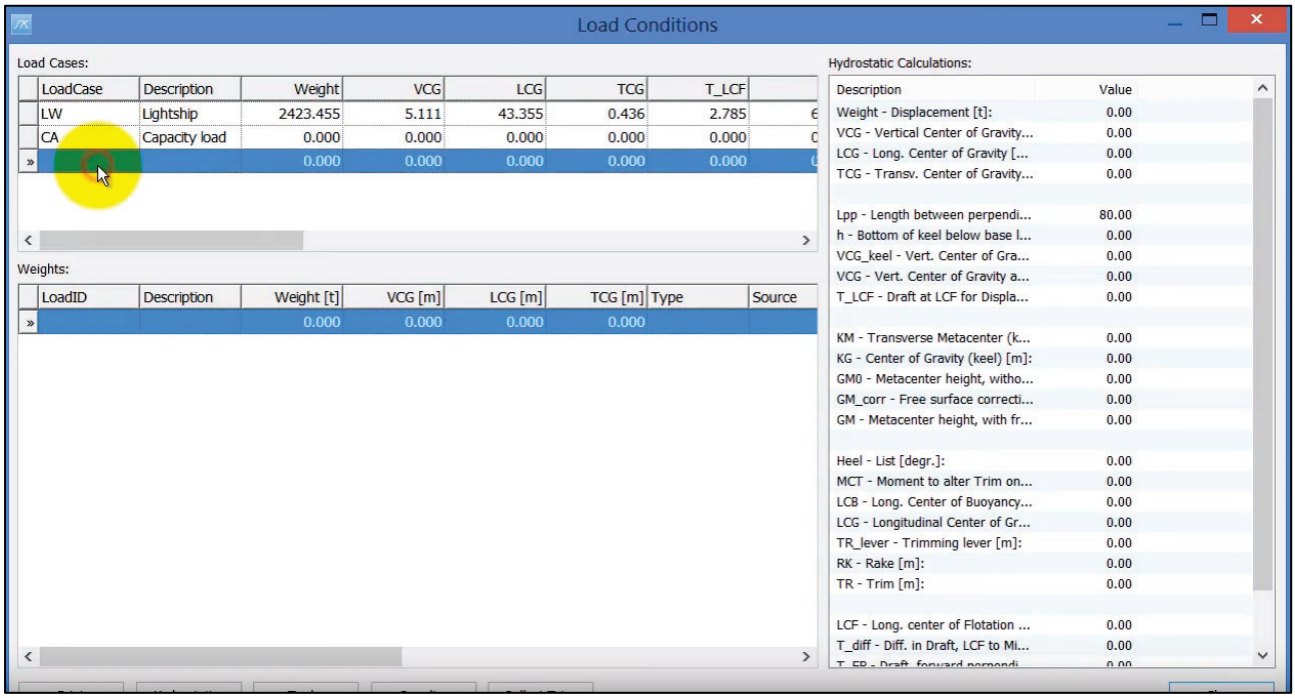




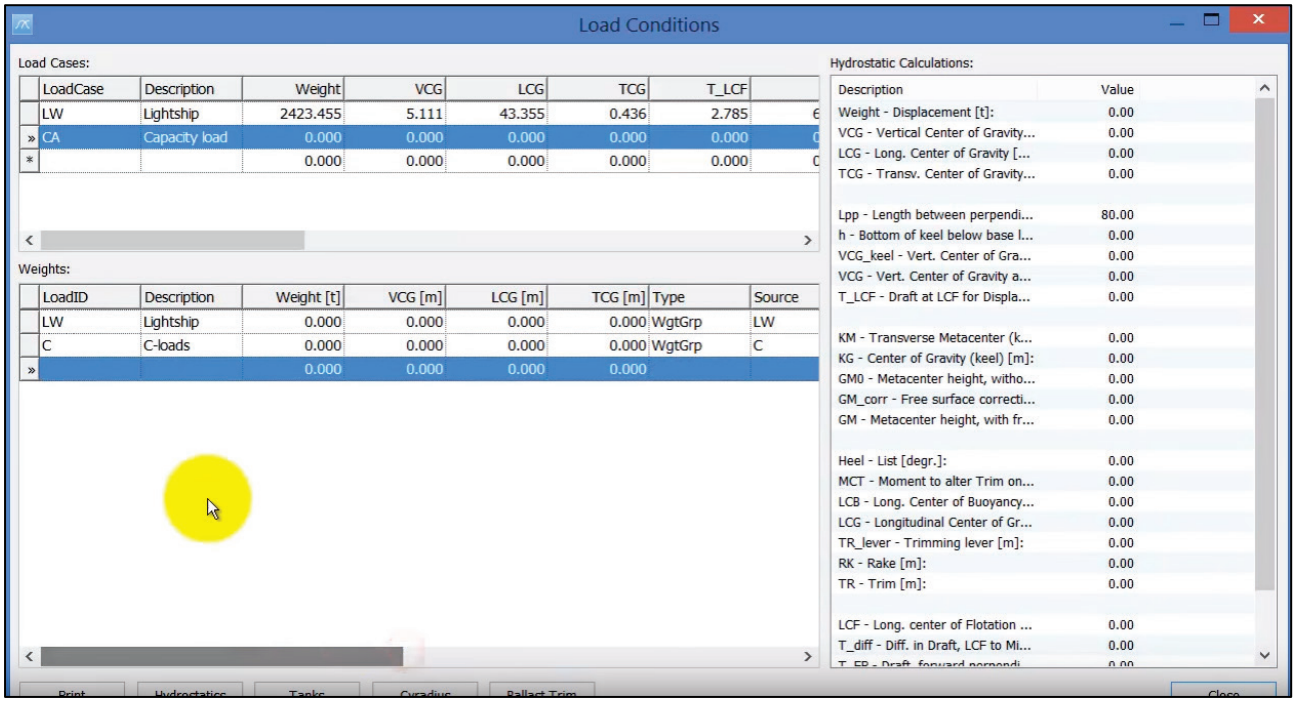
And now it brings in the numbers of the weight and cg of the lightship, and also calculates the values for the Hydrostatics on the right side of the window:



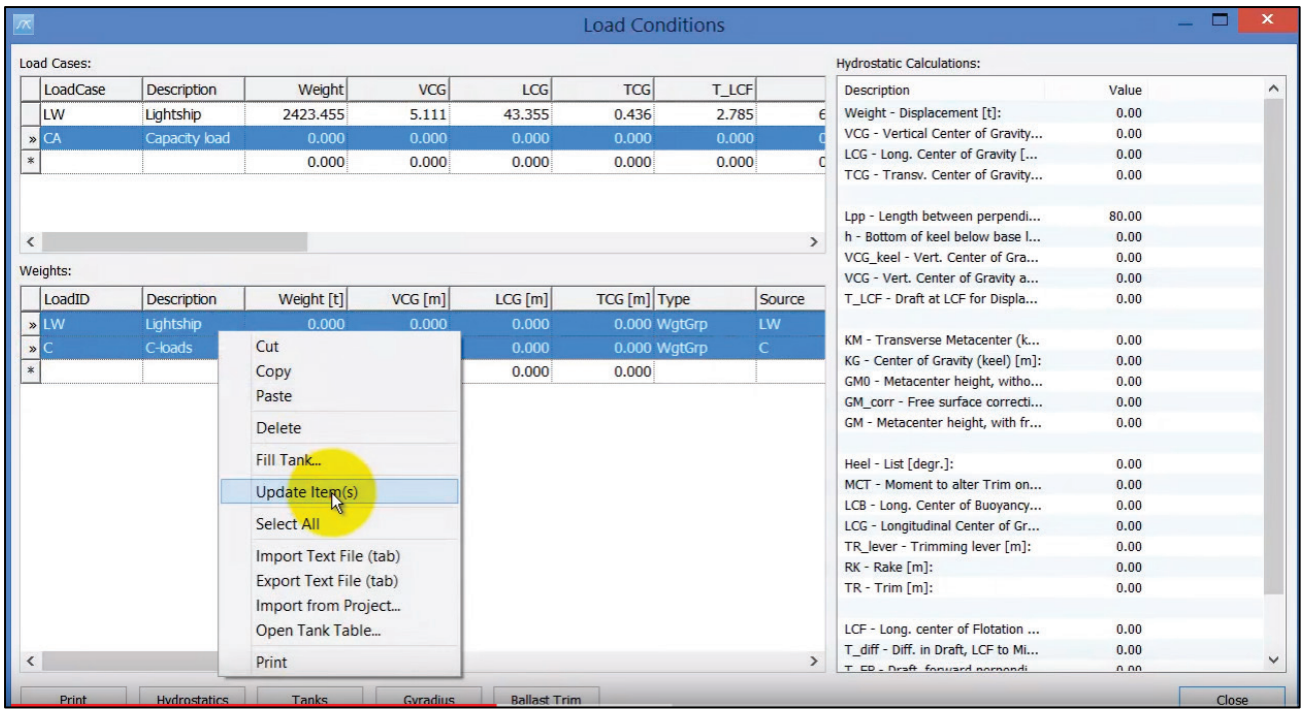
Step 4: Create a Capacity Loading Condition

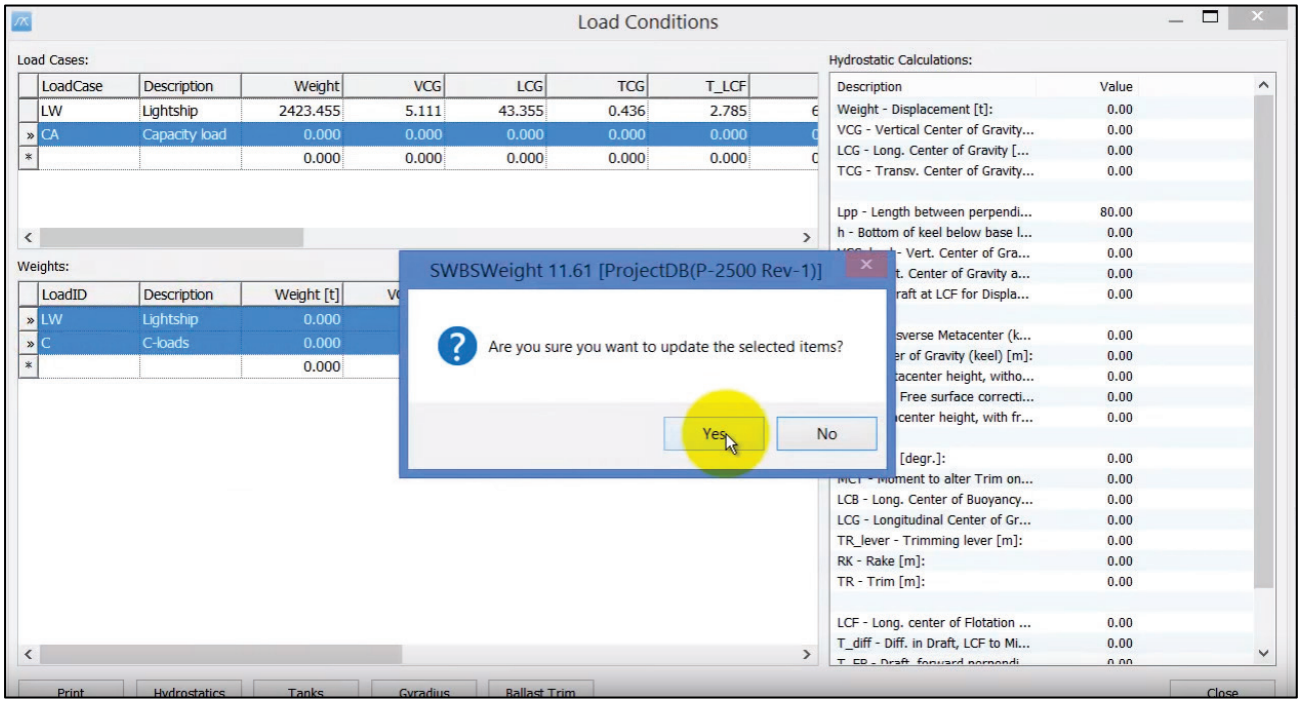


And the Lightship and C-loads weights:

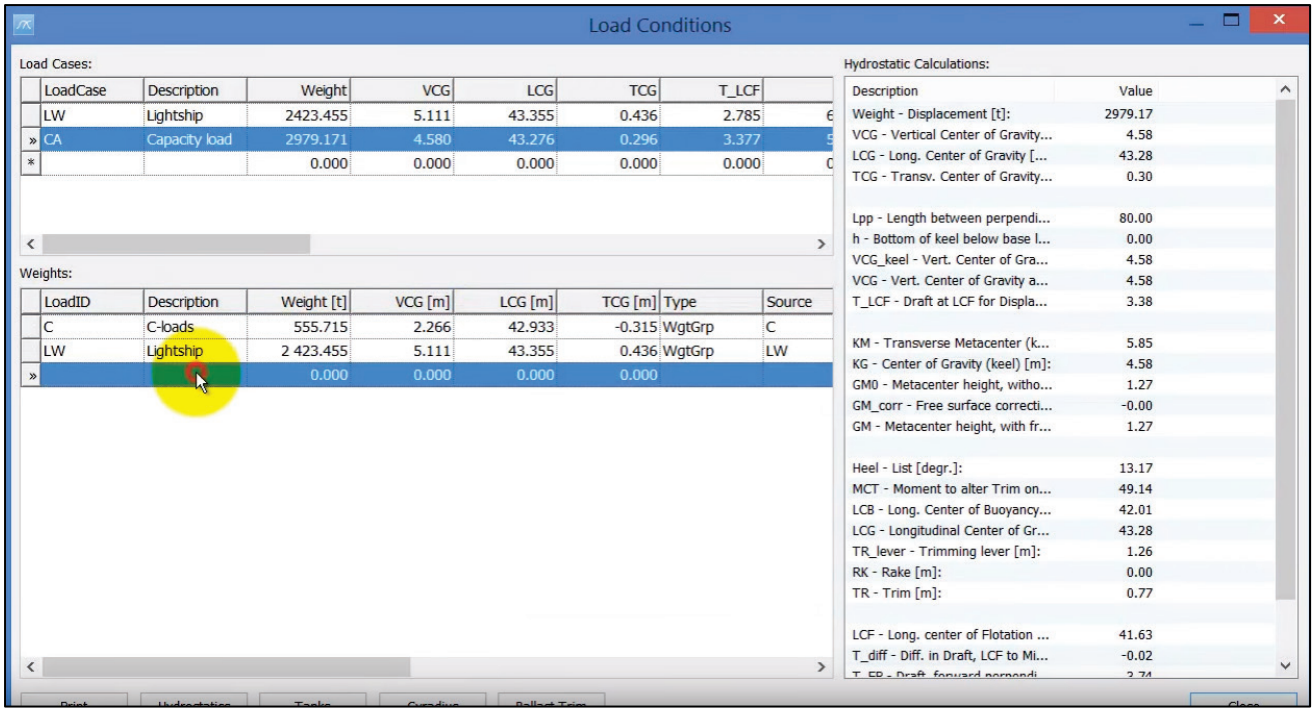


Again, select both lines from Weights area, right click and Update Item(s):

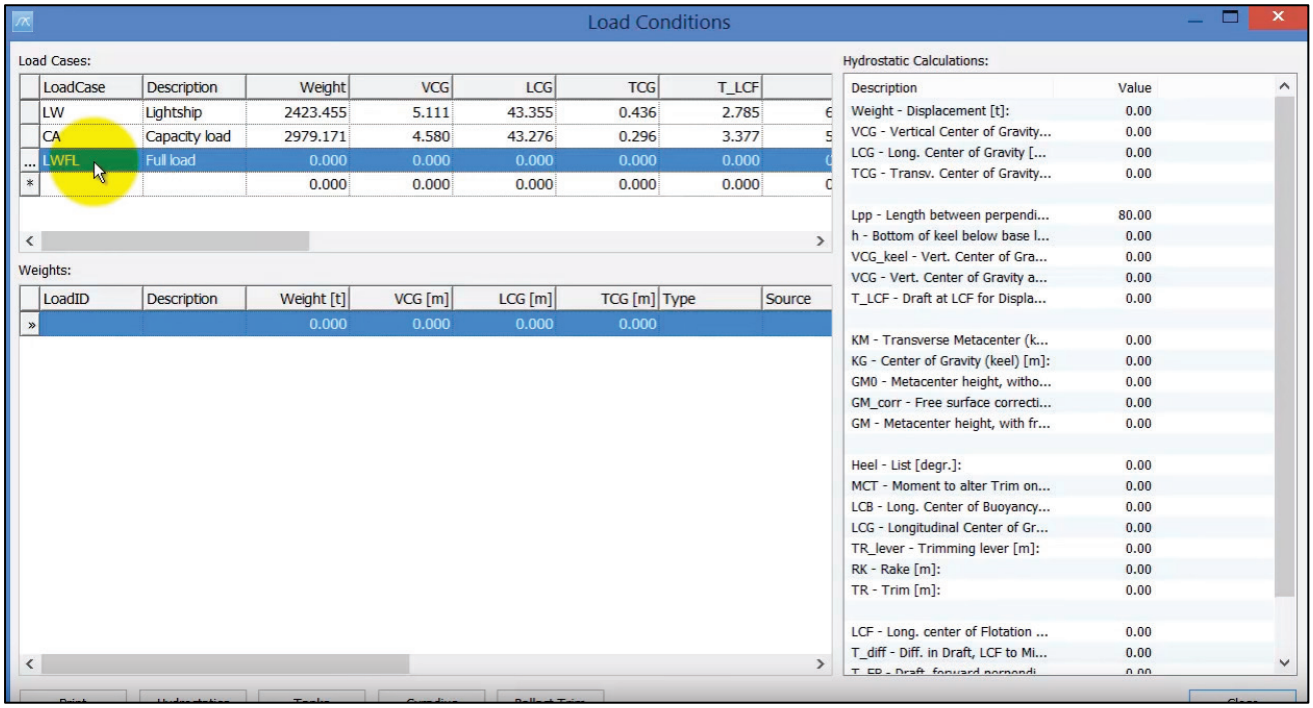


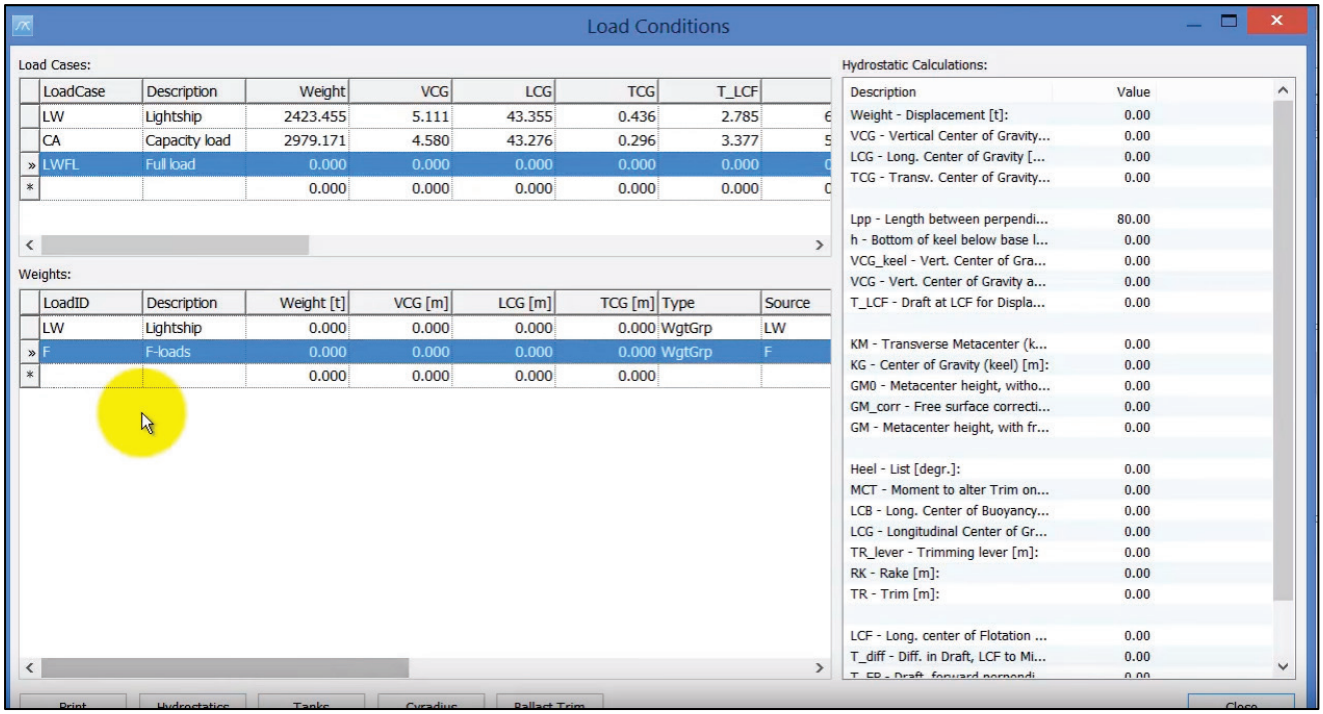


This brings in the numbers of the weight and cg of the lightship, and also calculates the values for the Hydrostatics on the right side of the window:

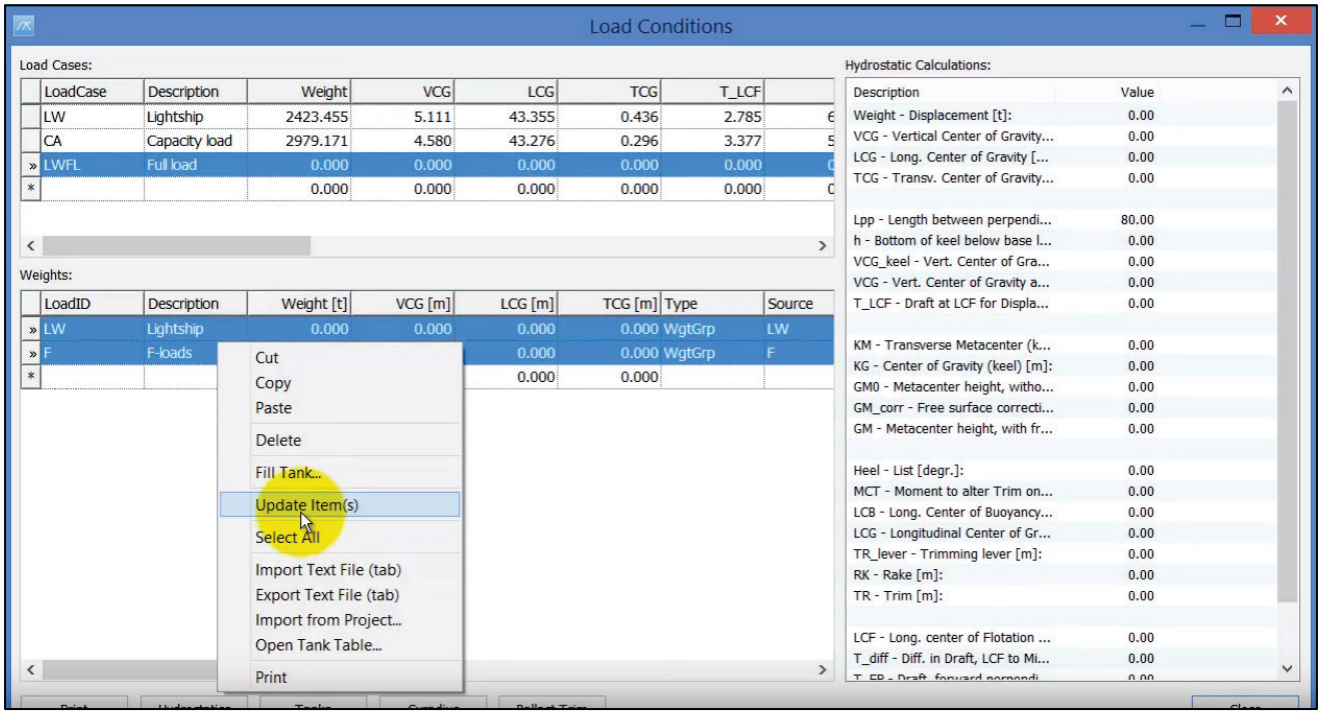


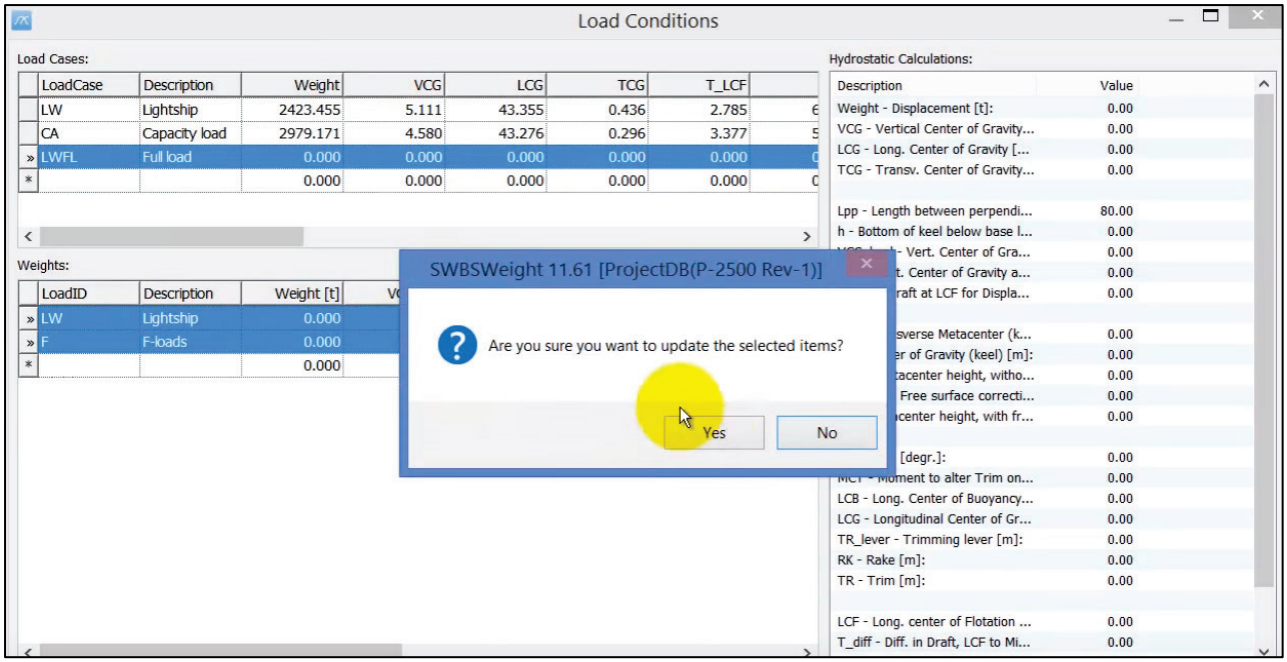
Step 5: Create a Full Load Condition

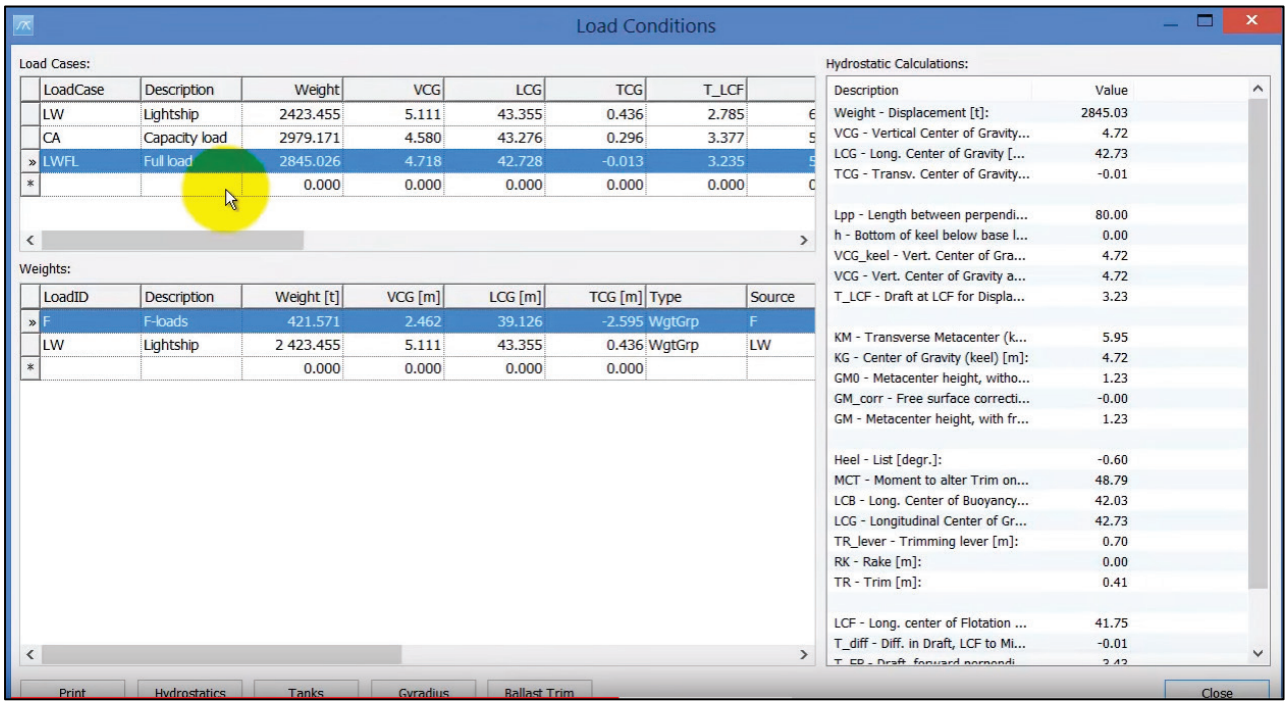




The links that we create to ShipWeight, they are not live, so we need to select these items and right click and Update Item(s) manually every time:



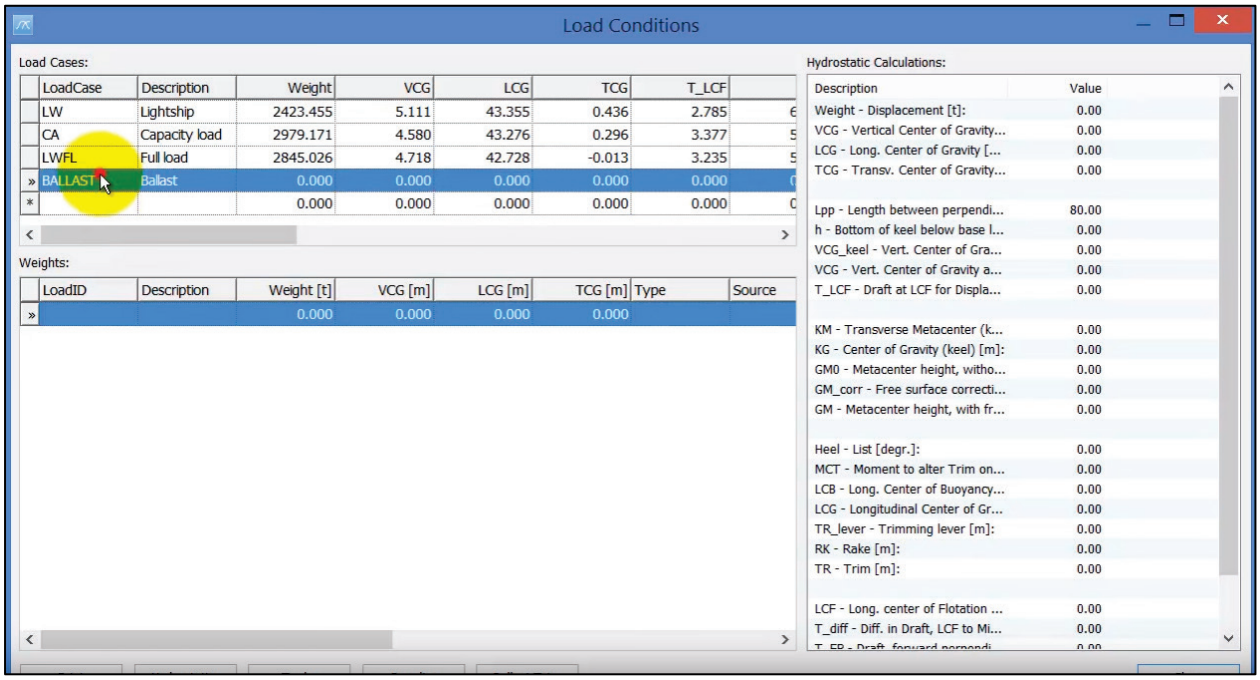




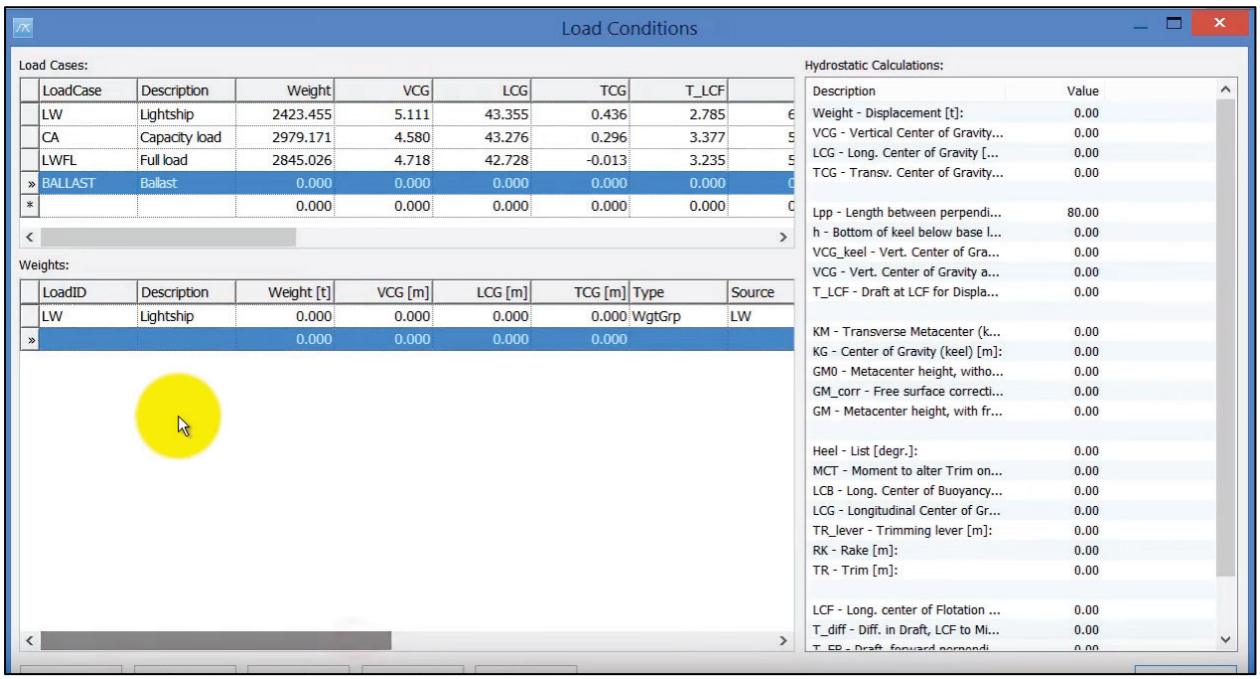
Now we have created 3 loading cases, and have the hydrostatics values calculated for all 3 of them. All of the loading cases have one line each, but of course more weights can be added for each loading condition.

Another way to create loading conditions is just refering to weight groups in the main hierarchy.

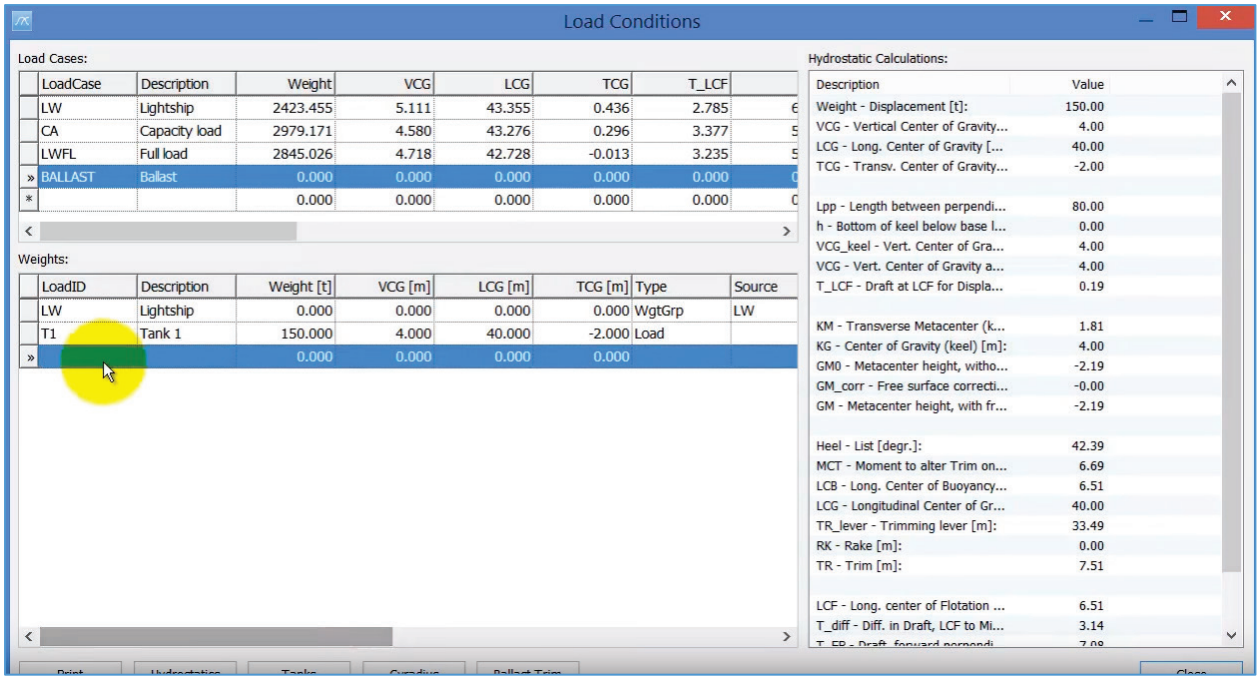
Step 6: Define a Ballast Condition



We will not refer to any weight groups, we will only define the lightship weight in ShipWeight:

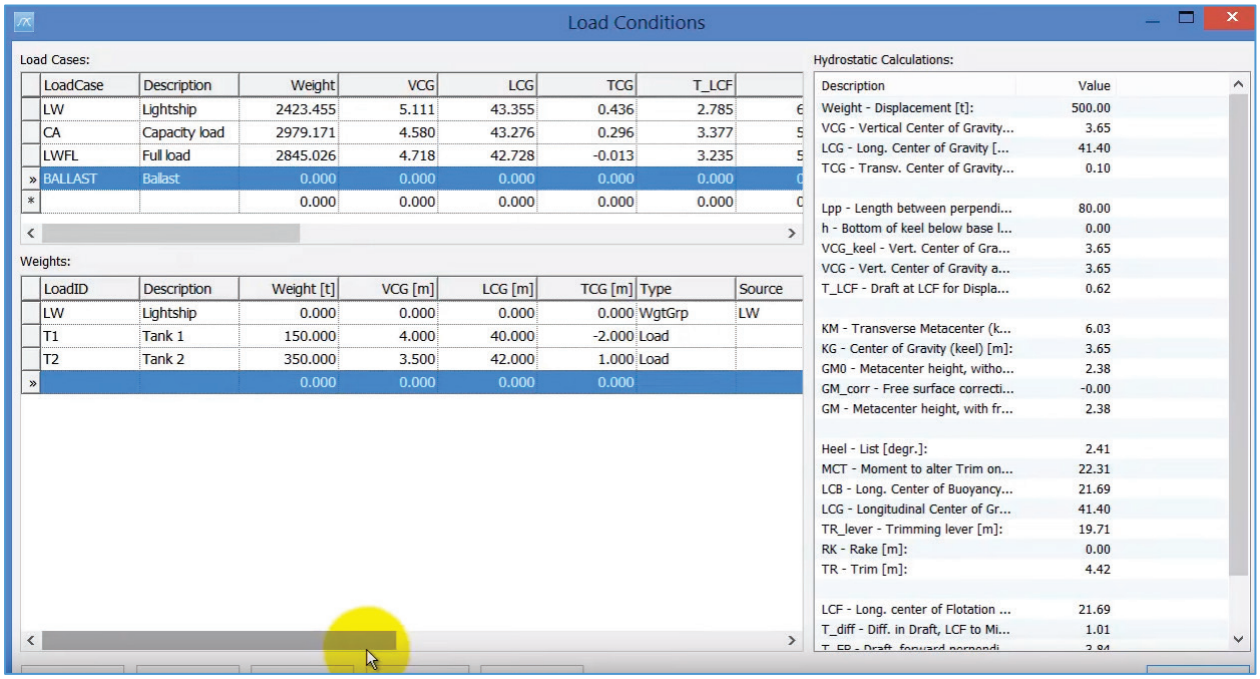


But, now instead creating another reference to the ShipWeight weight groups, we will create a reference to the tank load:

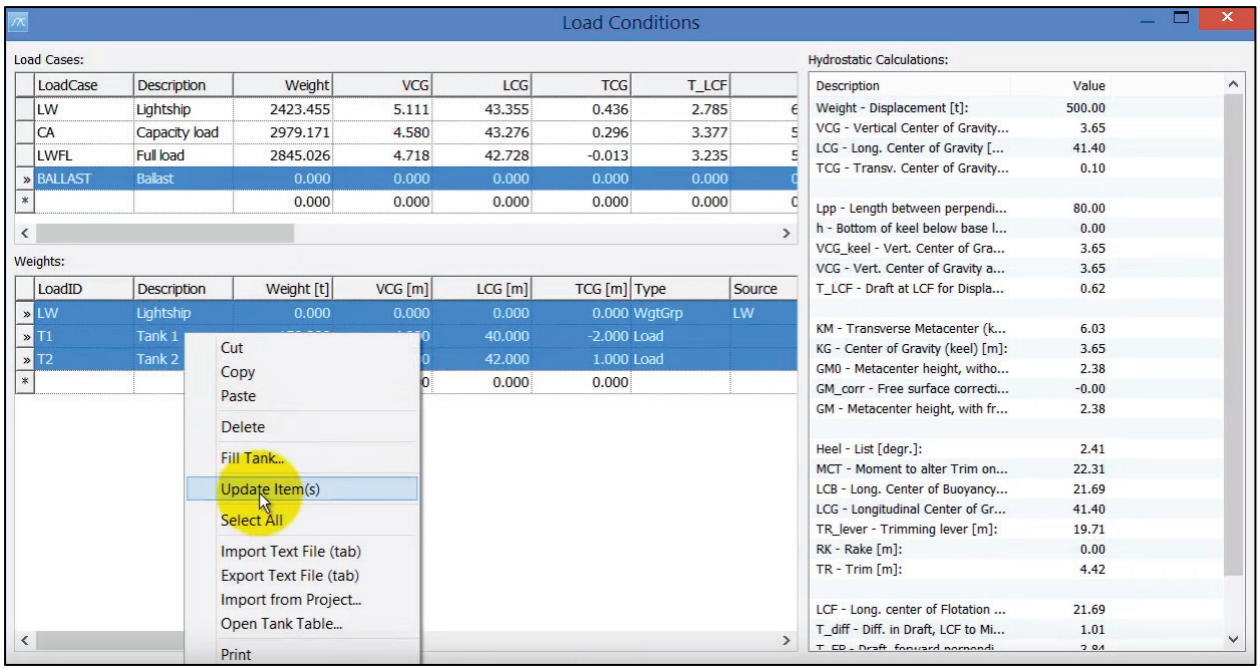


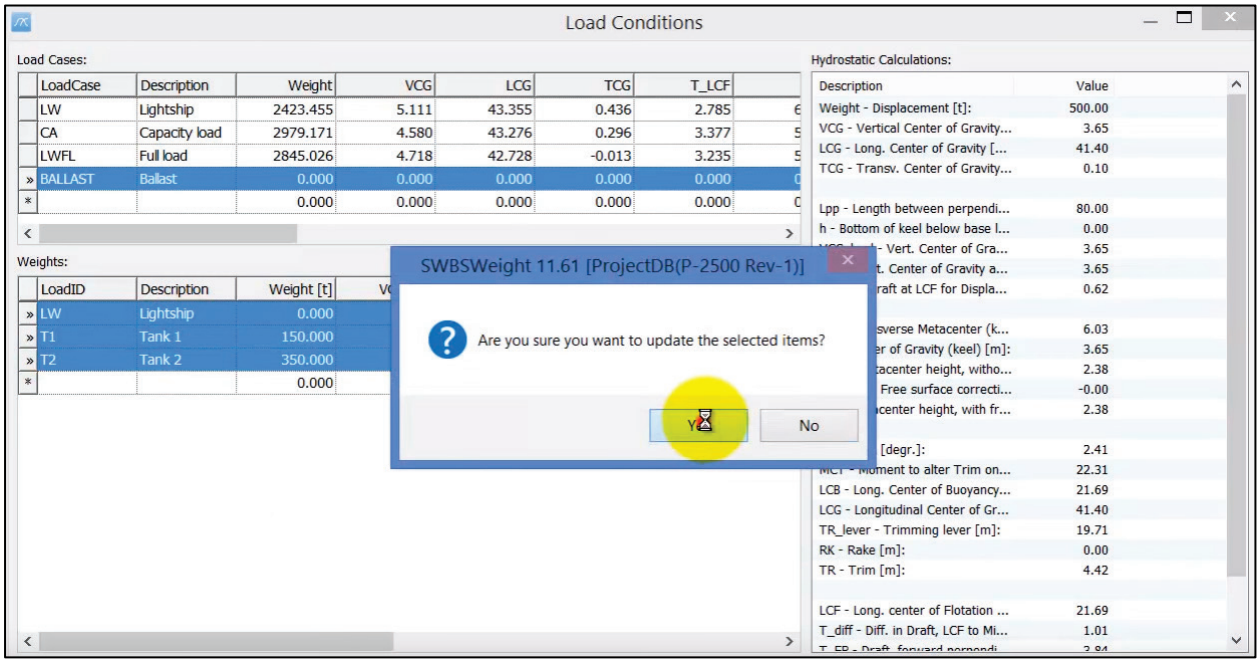
So, T1 doesn't have a Source because is just a load point.

And one more point load T2 needs to be defined:

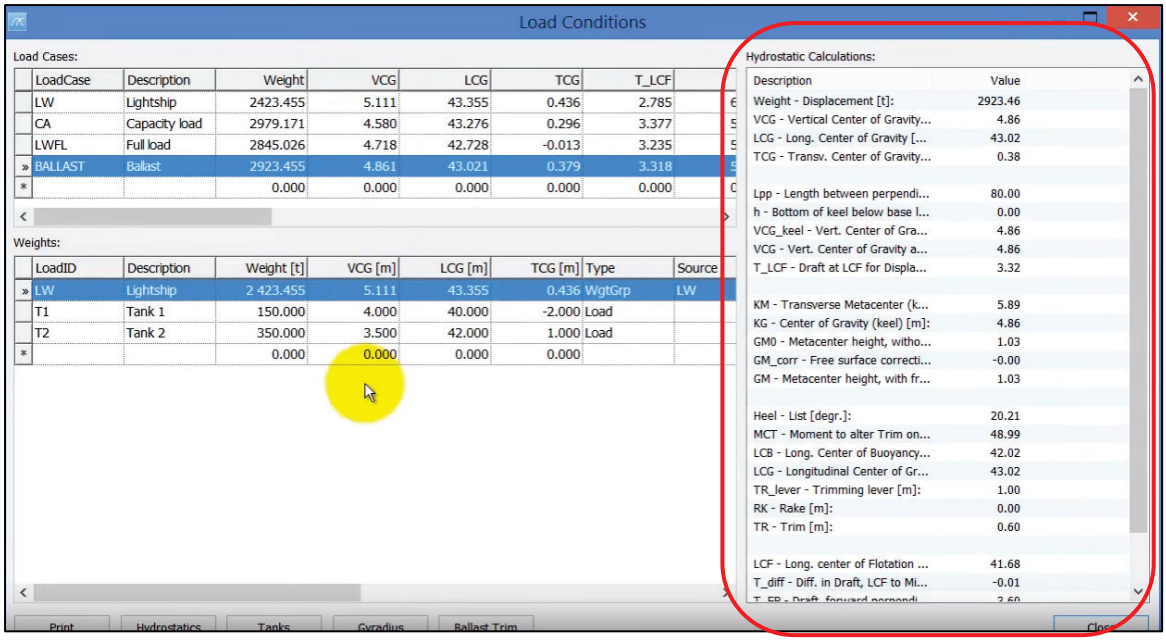


Select all weight groups, right click and Update Item(s):



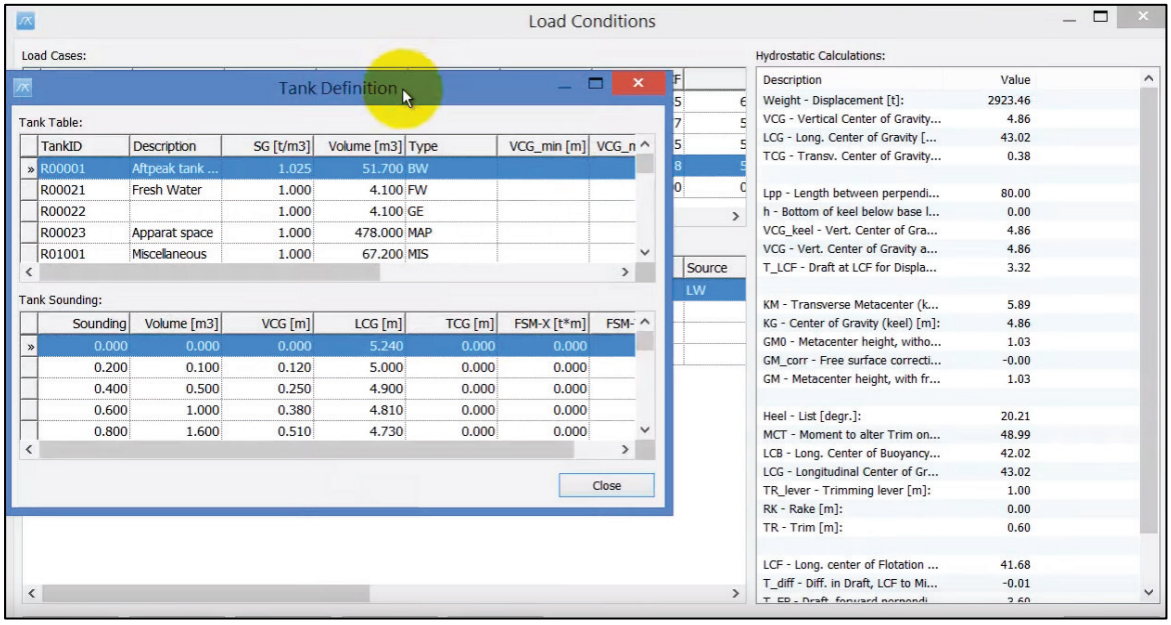


The hydrostatics values are calculated:

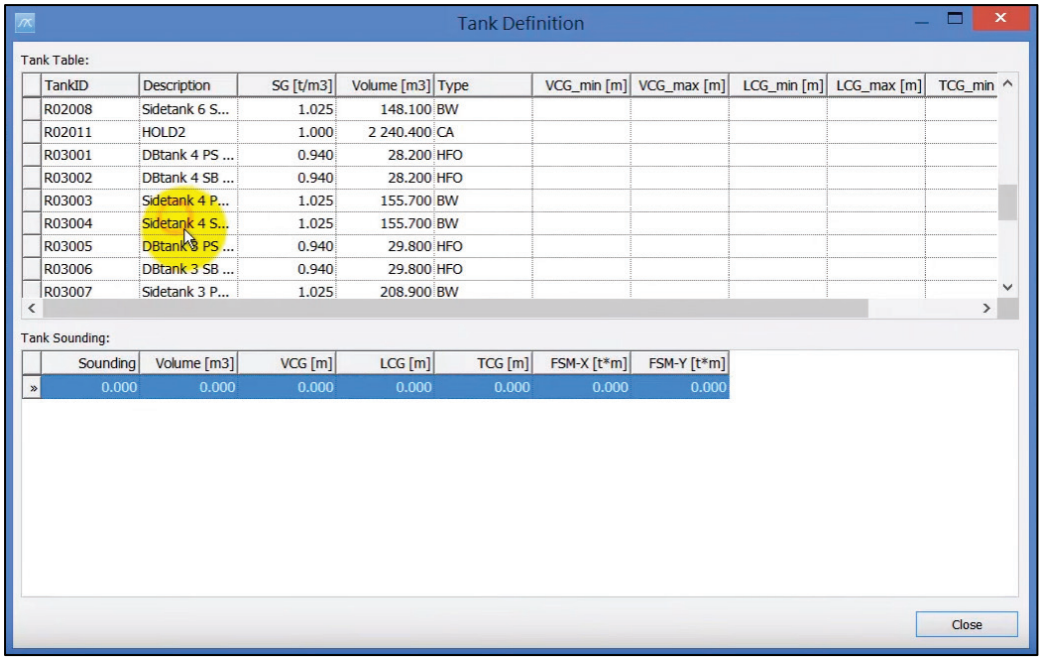


The last loading condition to be shown allows you to refer tanks that have specific contents and sounding and then it will fill up those tanks by using sounding tables.

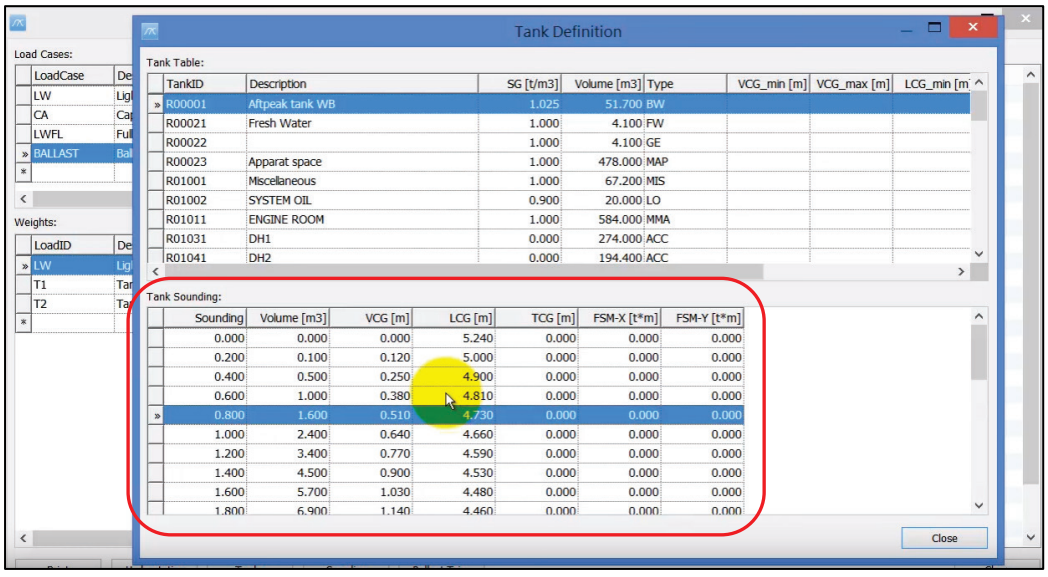
To be able to do that, in adition to add the Hydrostatics table, you also need to add tanks. So, if we click on the **Tanks** button, the Tank Definition window will open:



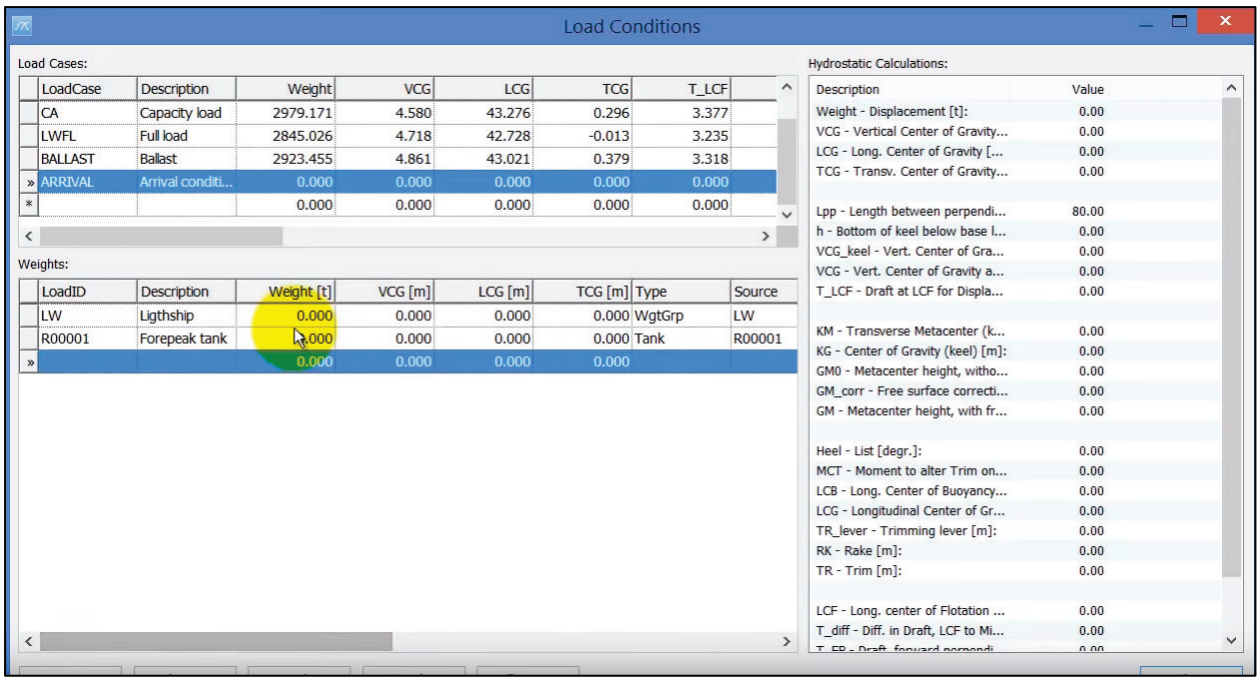
We can see the prefilled list of tanks:



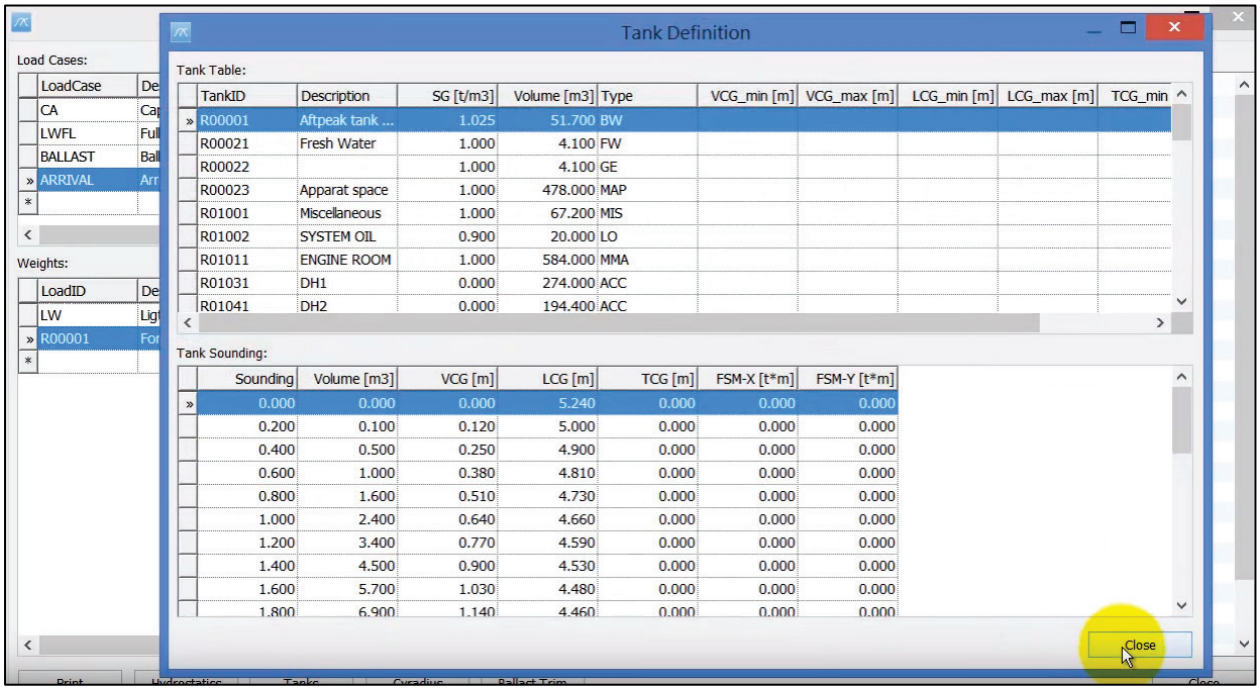
If we select one TankID, we will see for this specific tank, the sounding table, which allows to fill the tank for a certain percentage:



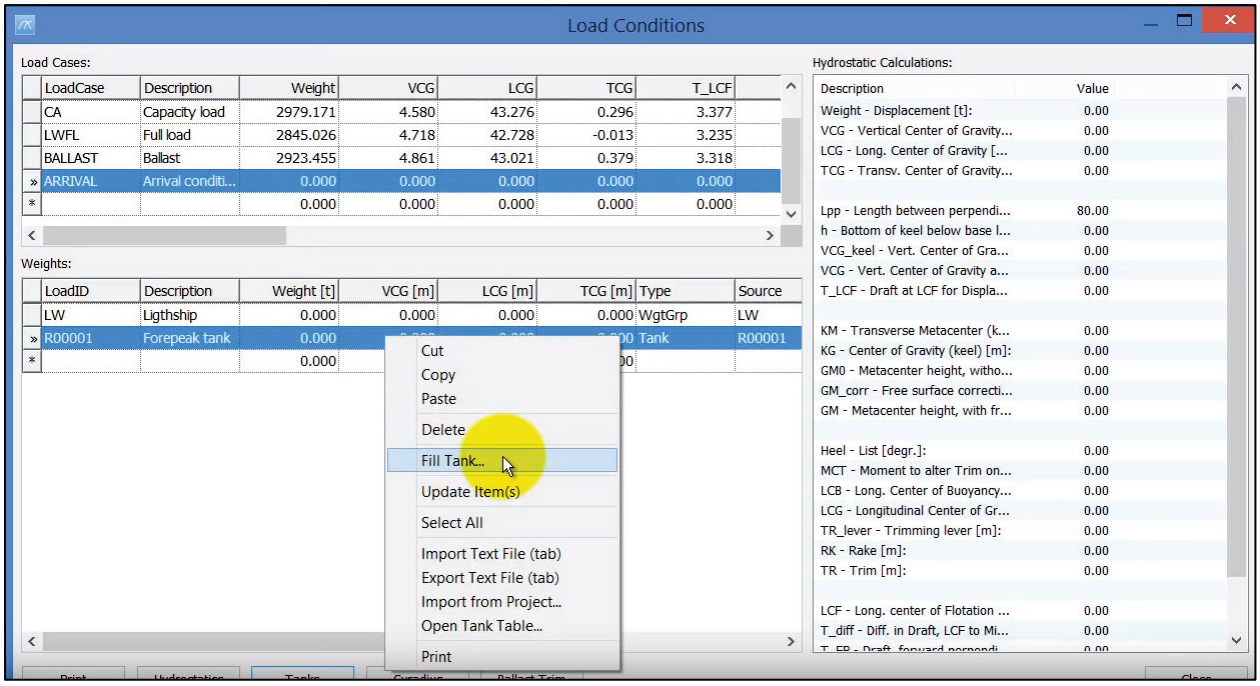
Close the Tank definition window and define a new loading condition **ARRIVAL** and the corresponding weights:



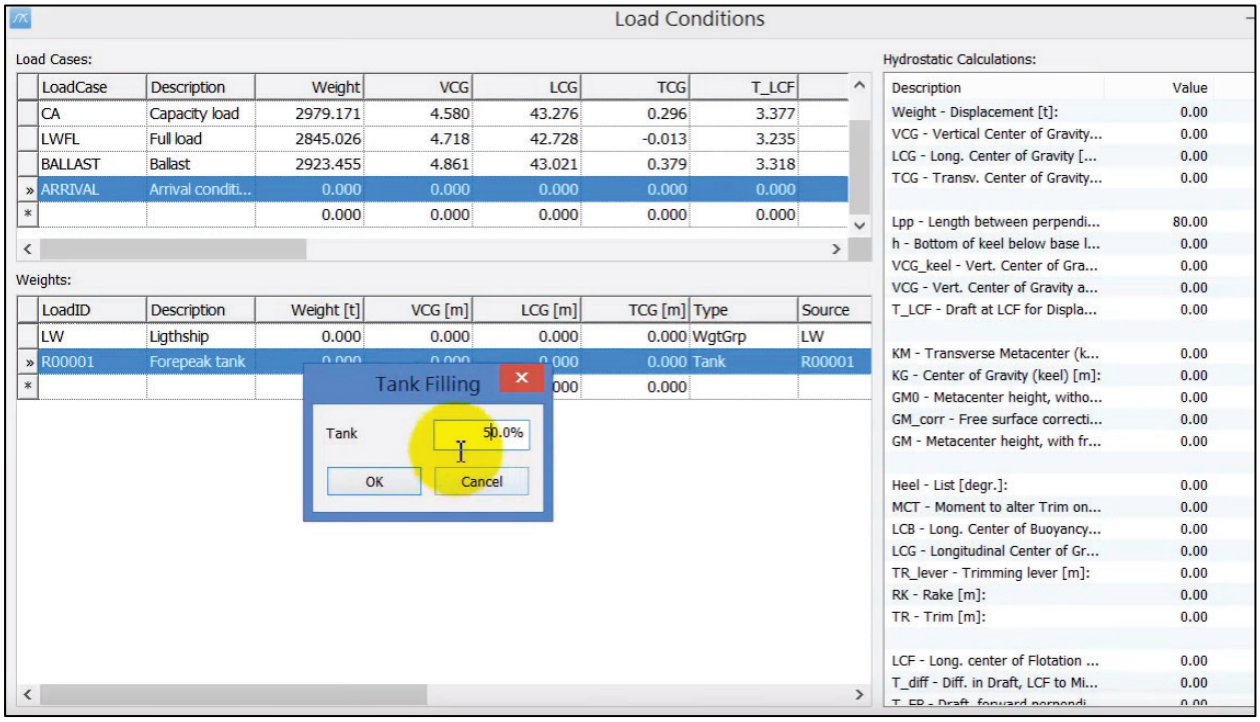
R00001 line is connected to the Tanks list (window), which again is connected to sounding table:



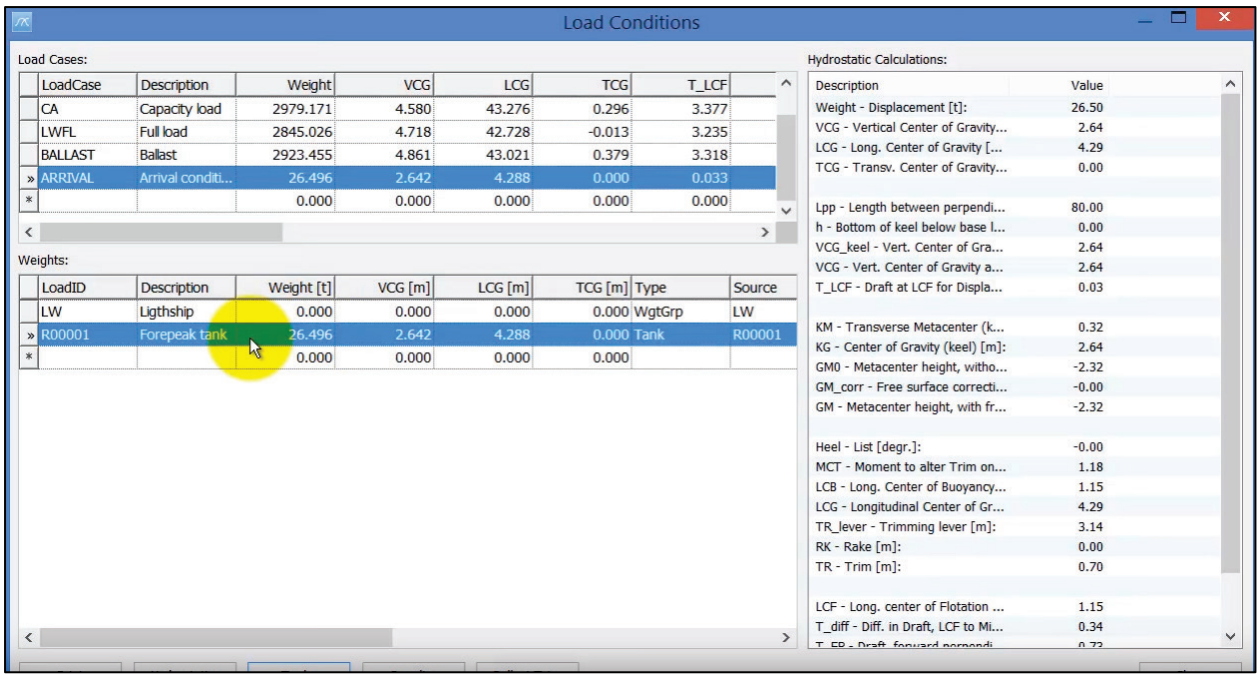
Right click on R00001 and select Fill Tank…



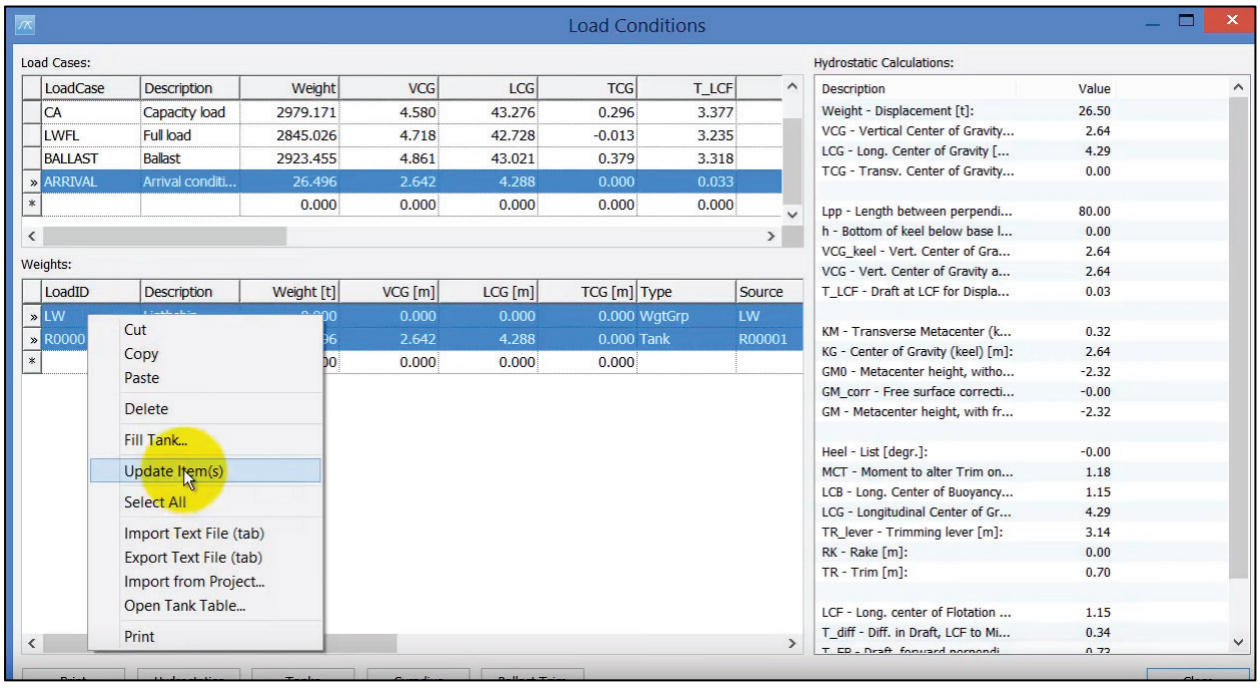
And for example, use 50% fill:

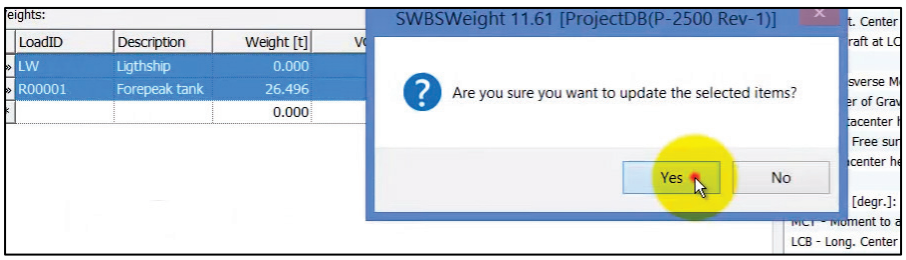


Press OK. And then, ShipWeight looks up for the sounding table of this tank R00001, and gives the correct CoG and Weight:

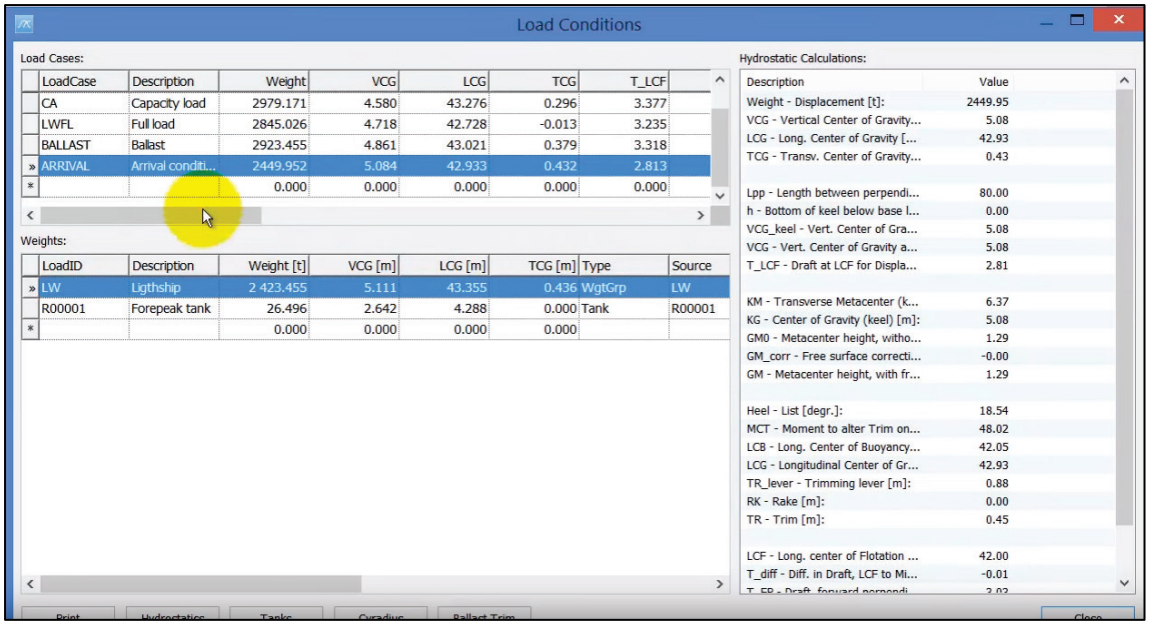


Finally, select these rows again and Update Item(s):

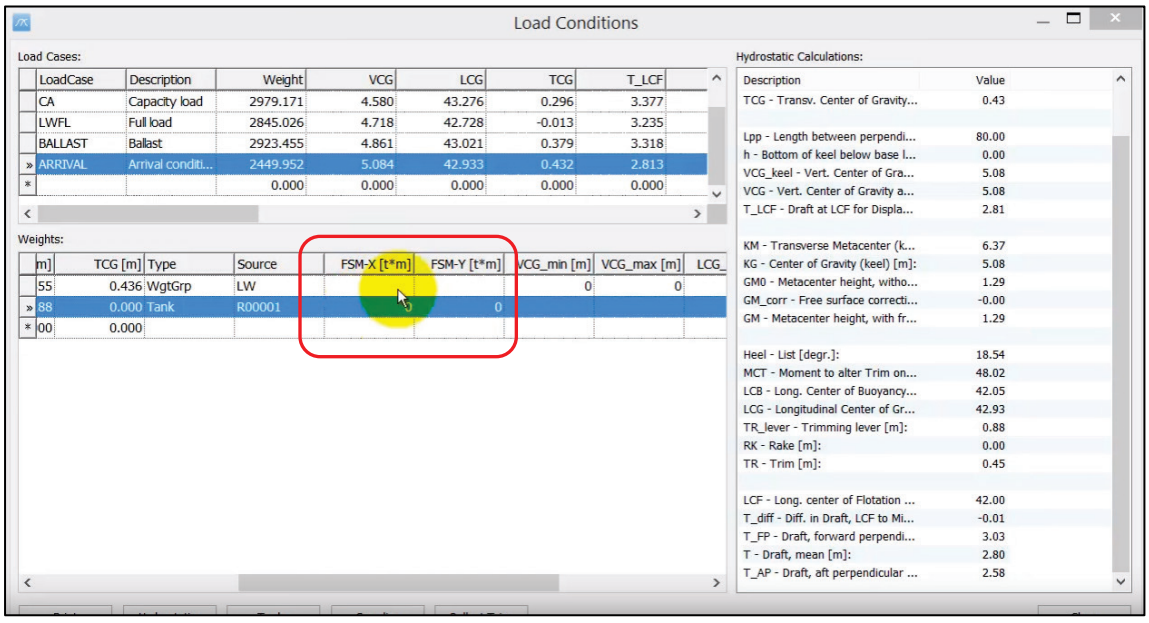




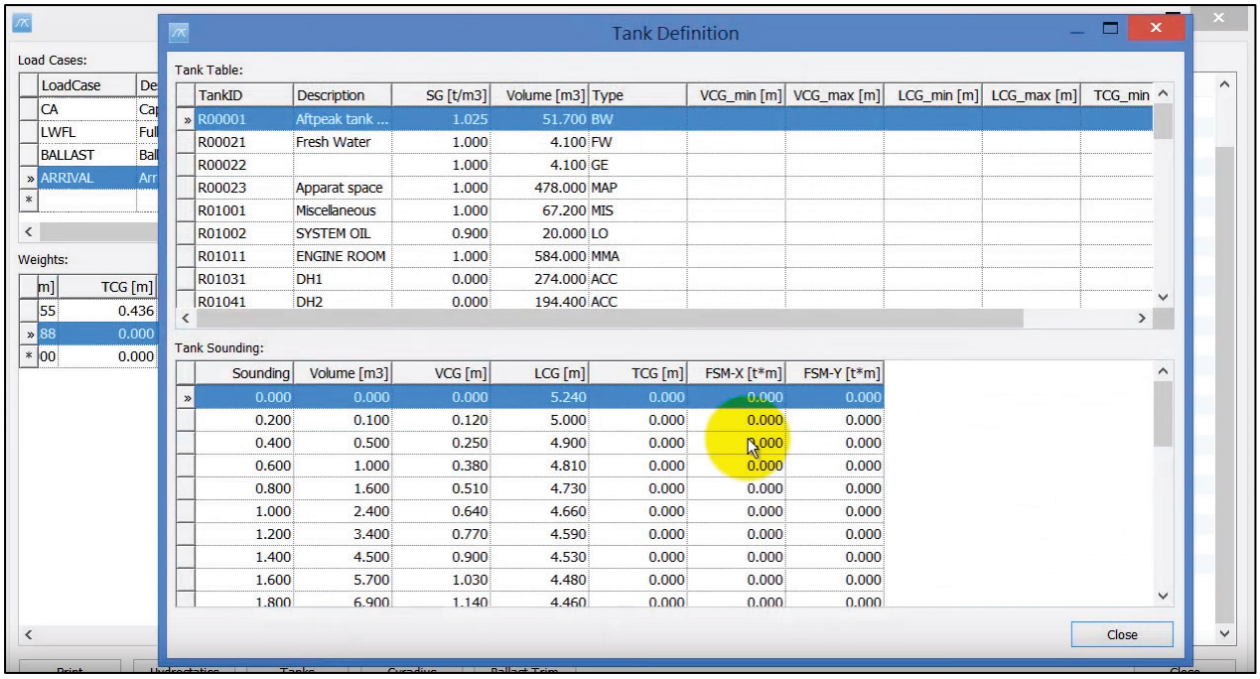
The arrival condition is updated and the hydrostatic values as well:



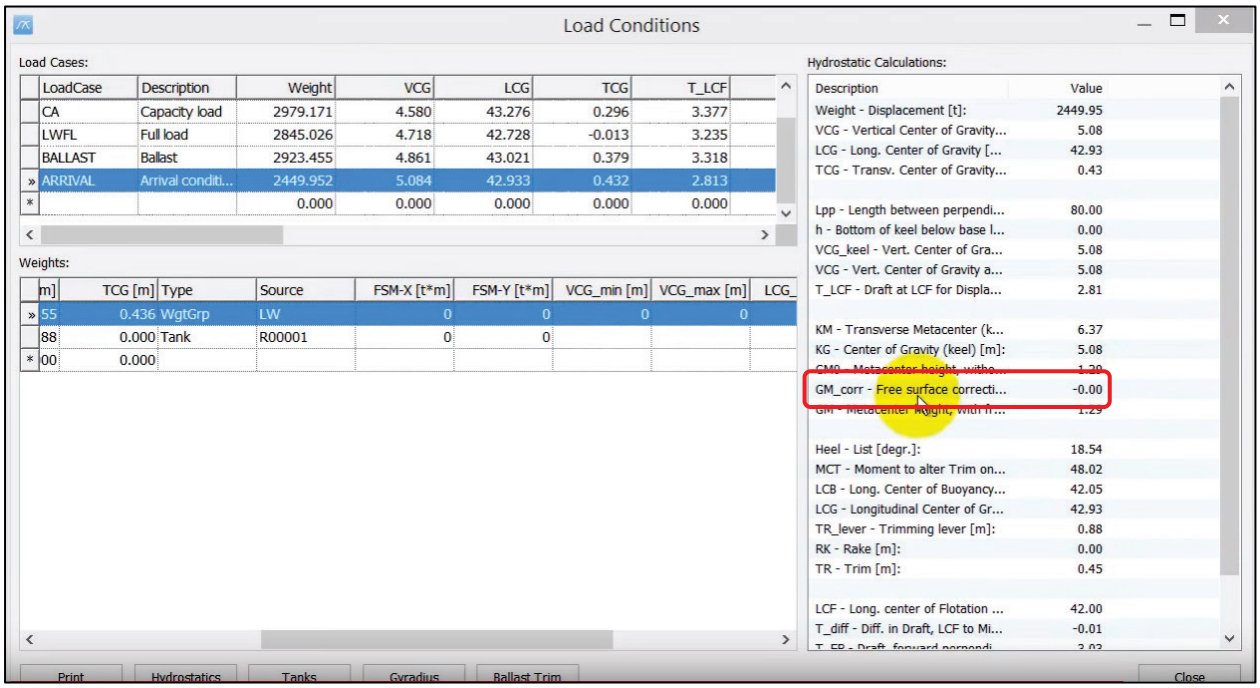
Values for the free surface moments can be given in directly either in the grid here:



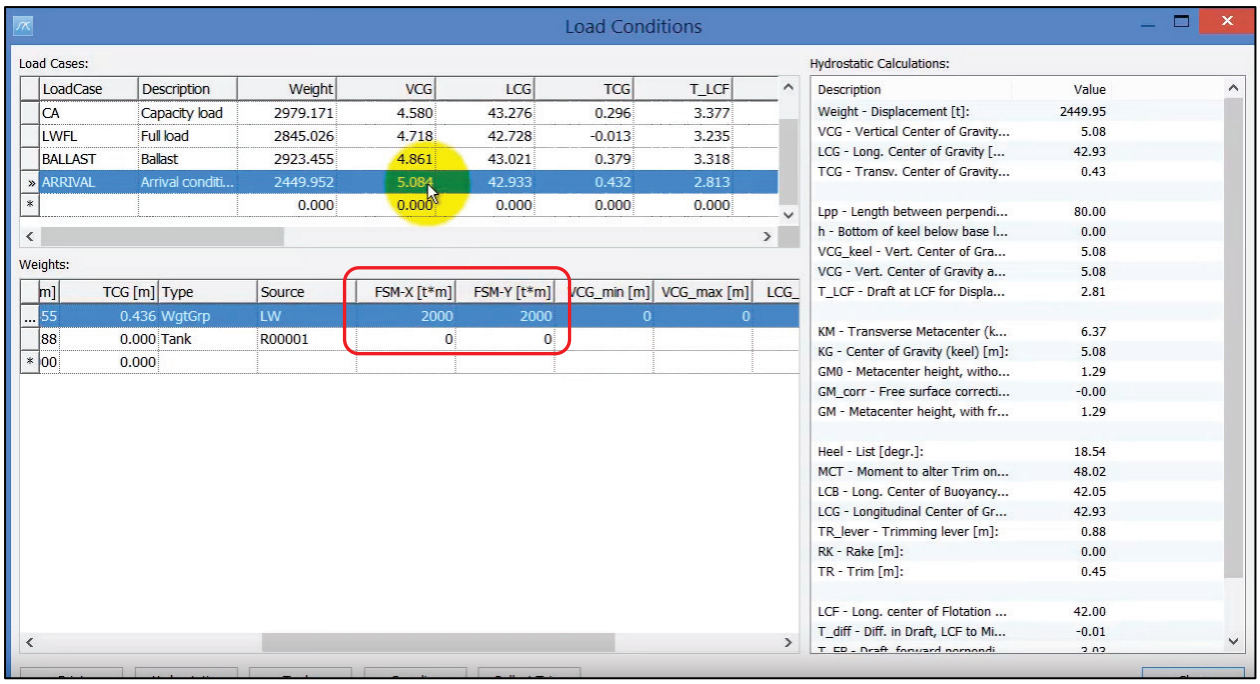
Or may be defined in the sounding table in the Tank Definition table:



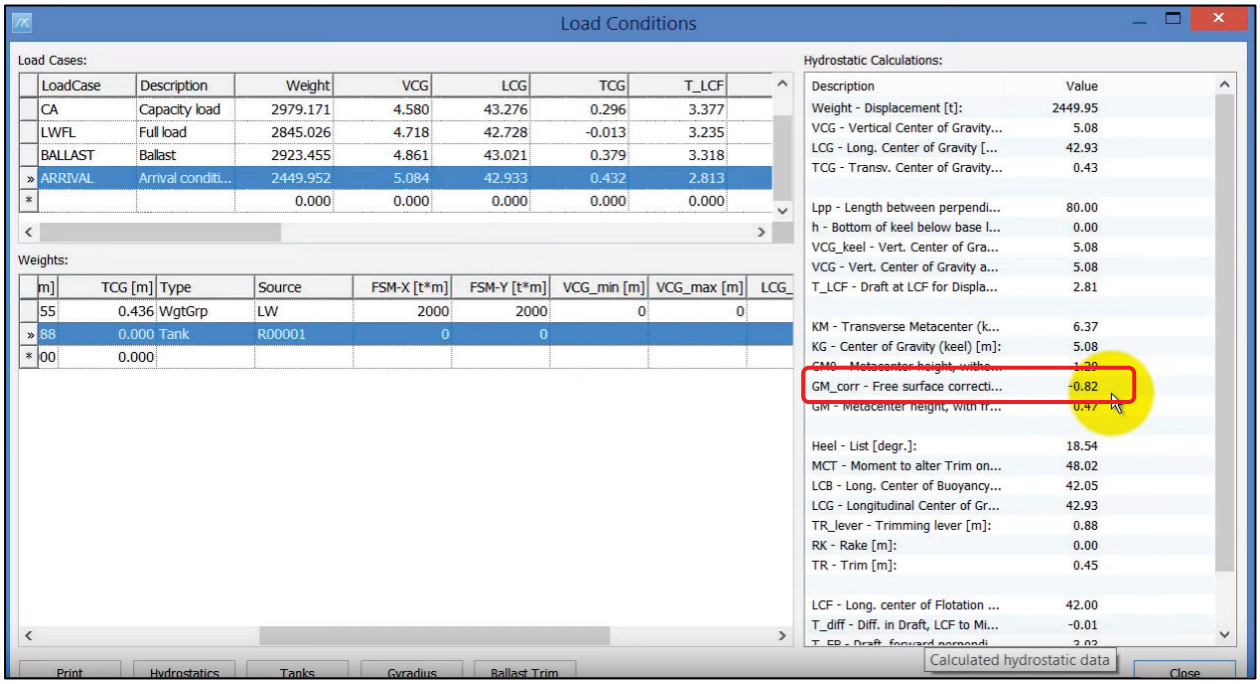
As you can see now GM_corr –Free surface correction is 0:



But if you type in for FSM-X, FSM-Y some numbers:



You will notice the free surface correction value has changed:



Finally, one very important note, is that all the information from loading conditions window is taking basis in the fact that the origin is AP, baseline and centerline for the calculations.

If you are using a project with the origin in FP and positive axis going from FP toward AP, to get correct hydrostatic values calculated.

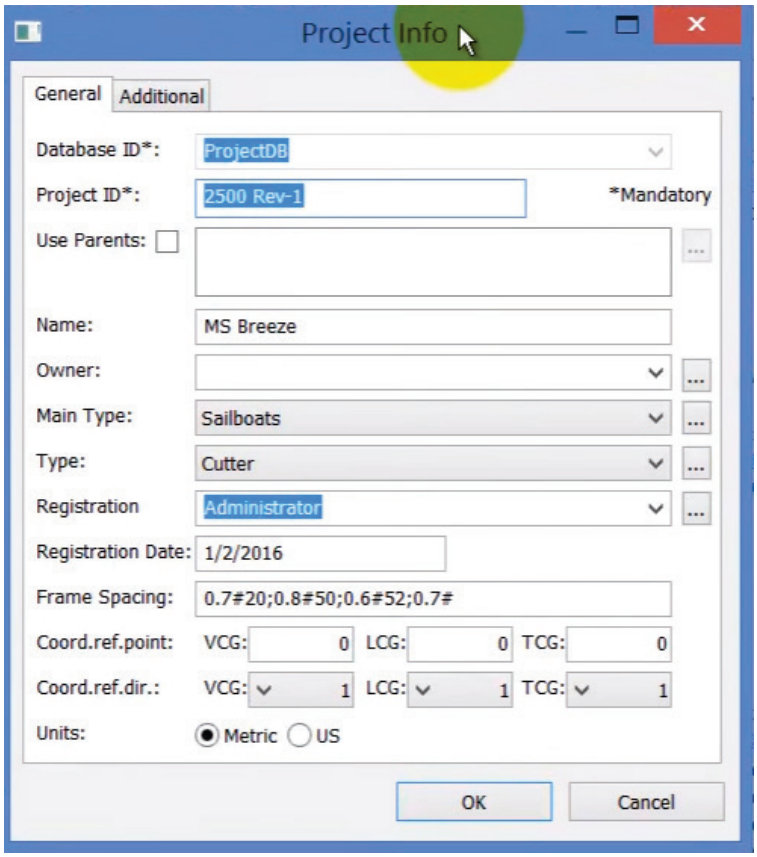
IMPORTANT:

If your project is defined with origin in FP (FP=0) and positive direction from FP towards AP, make project settings as shown here:

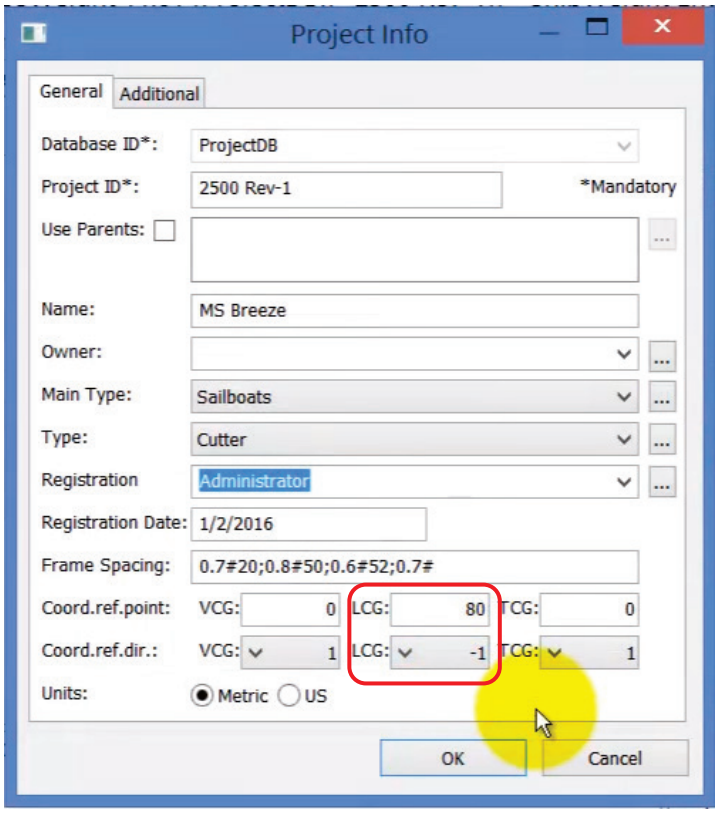
LCG set to Lpp value

LCG dir. Set to -1

So, in the Project Info window:



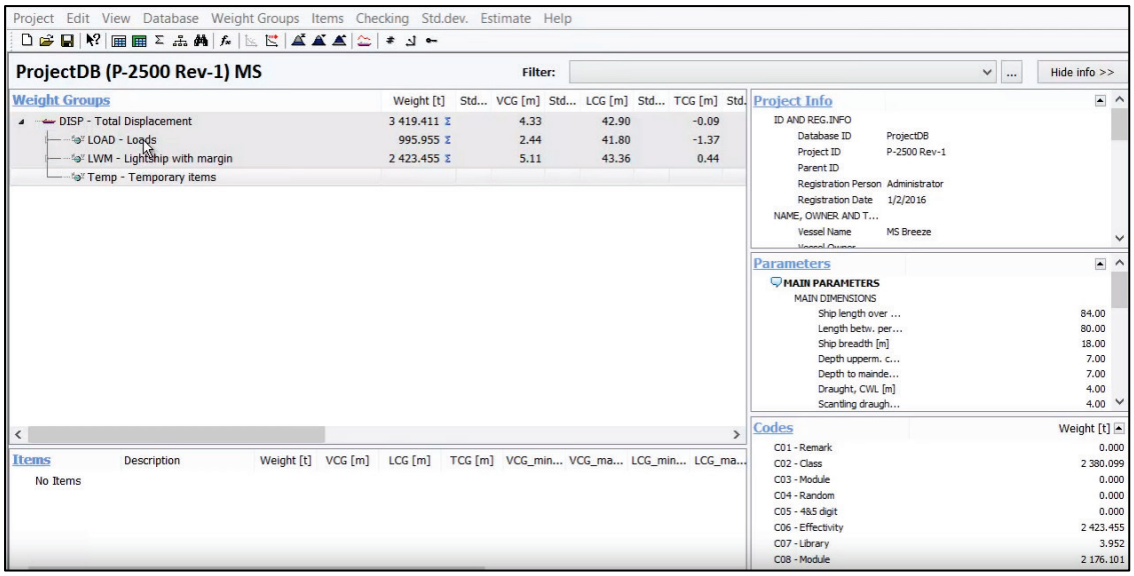
Change the LPP value, in this case LCG from 0 to 80, and then shift coordinate direction from 1 to -1:



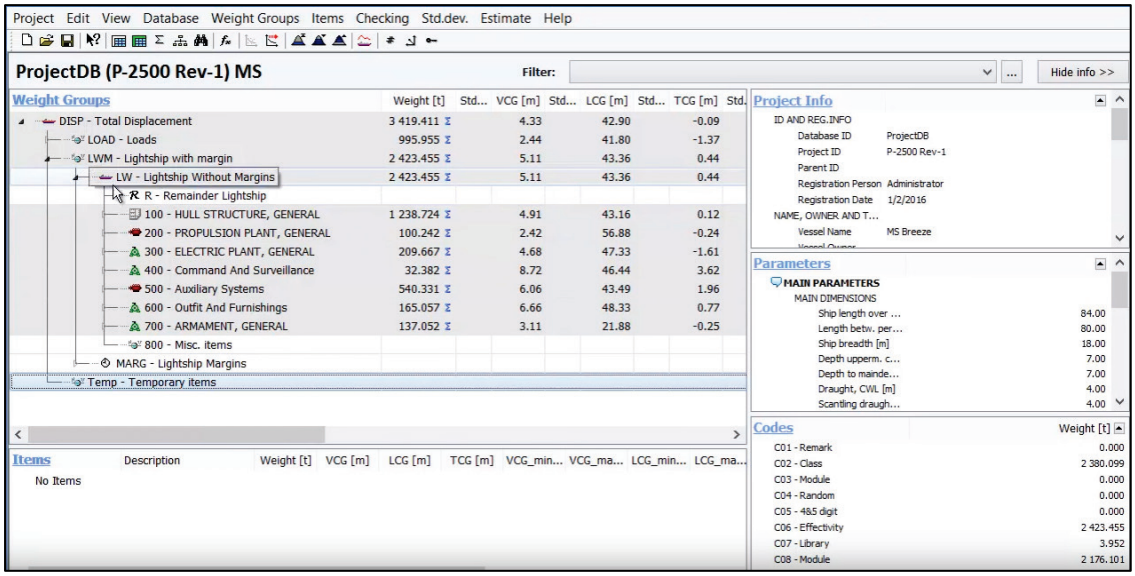
If you do an FP =0 and positive from FP to AP, make sure you make this changes to have the hydrostatics calculated correctly, otherwise drafts at fore and aft and trim values will be wrong.

Step 8: Alternative Method: Using Global Filter for Handling Loading Conditions

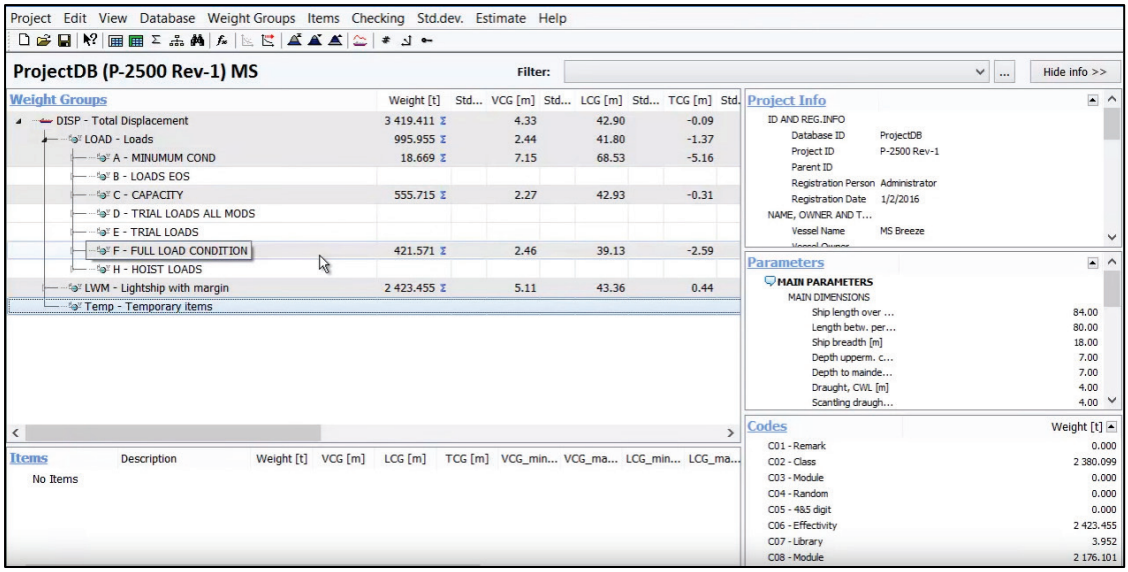
This chapter will explain how to hadle different loading conditions in the main window in ShipWeight. In the following project we have defined Lightship with margin items and Loads items, which together make up the total Displacement for the project:



Now, if we expand the Lightship, we can notice this is made up by the typical summary of the 1 through 700 digit SWBS numbers:



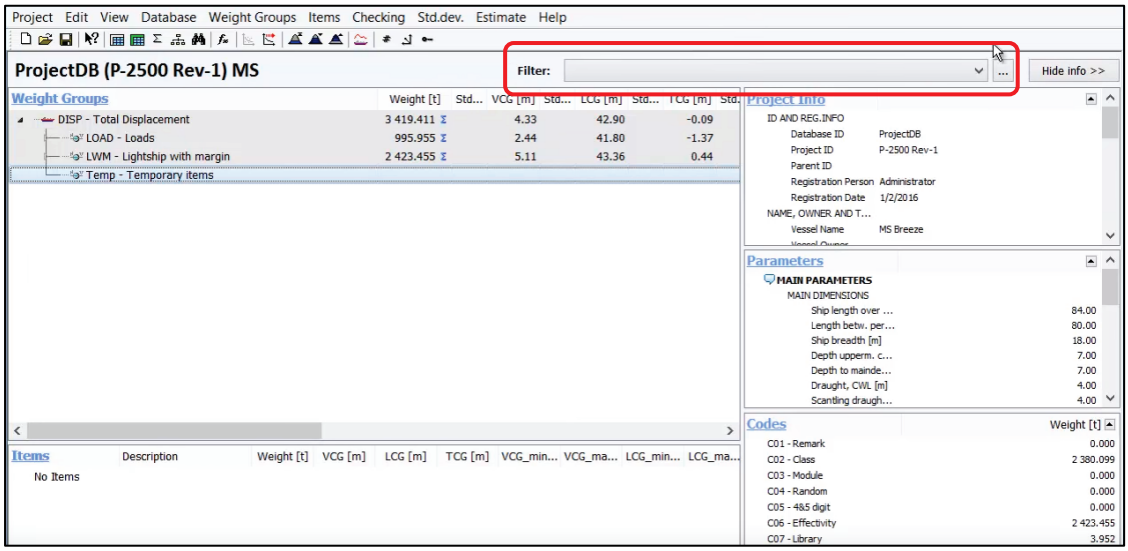
If we expand the load group, we will see that the load is made up by summarising A loads, C loads and F loads:



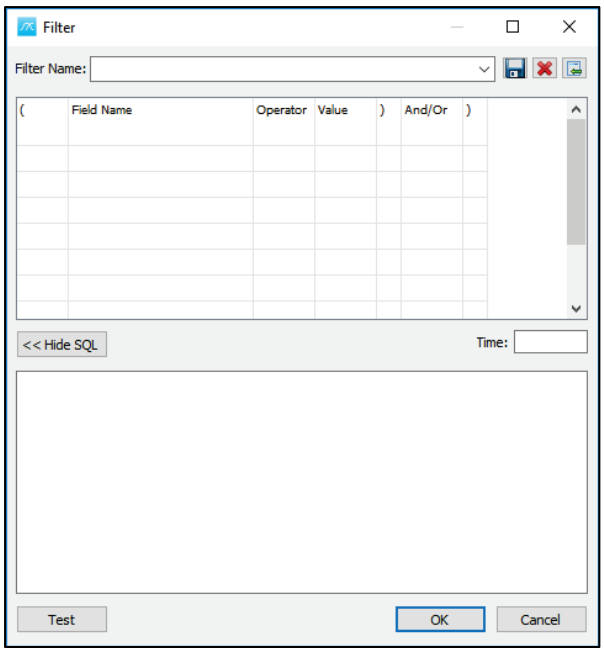
This is just a summary of all loading conditions, and thus the total displacement in this case which is the summary of the Loads and the Lightship doesn't make sense, it does not represents one particular loading condition.

So, now we will apply global filters to set up various loading conditions, that would be meaningful, in the main window and also in running other functions in ShipWeight like weight distribution curve, gyradius function, and so forth.

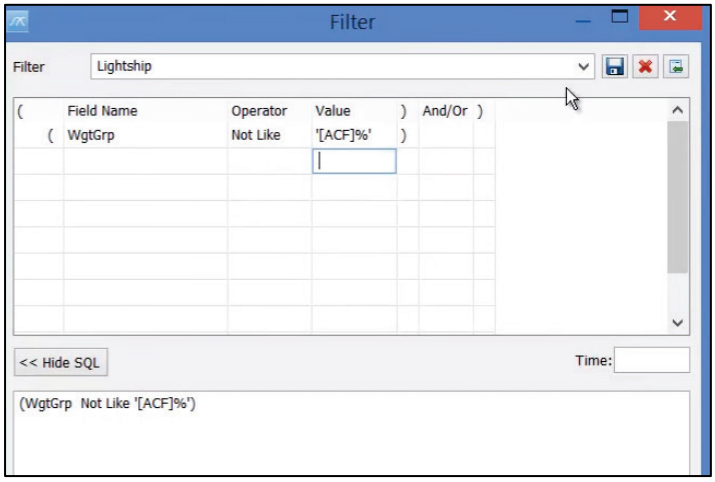
We will create loading conditions using the global filter. The global filter setting can be seen in the upper right side:



Click the browse button (to the right of the Filter droplist). The Filter window will open:



Now we will create gloval filters for our various loading conditions. First we will create a lightship condition for the lightship weight. Start by giving a filter name, and create the actual filter as following:



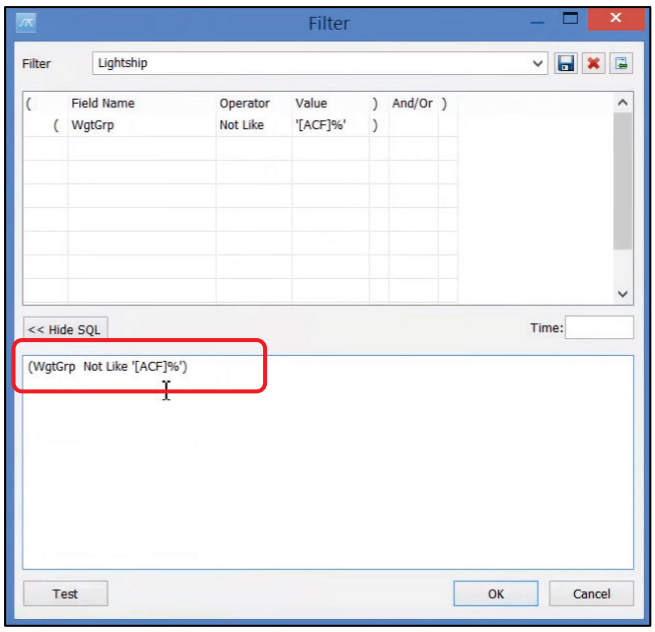
Global filter setup:

(WgtGrp Not Like '[ACF]%')

meaning: SWBS groups should not start with A, C, or F

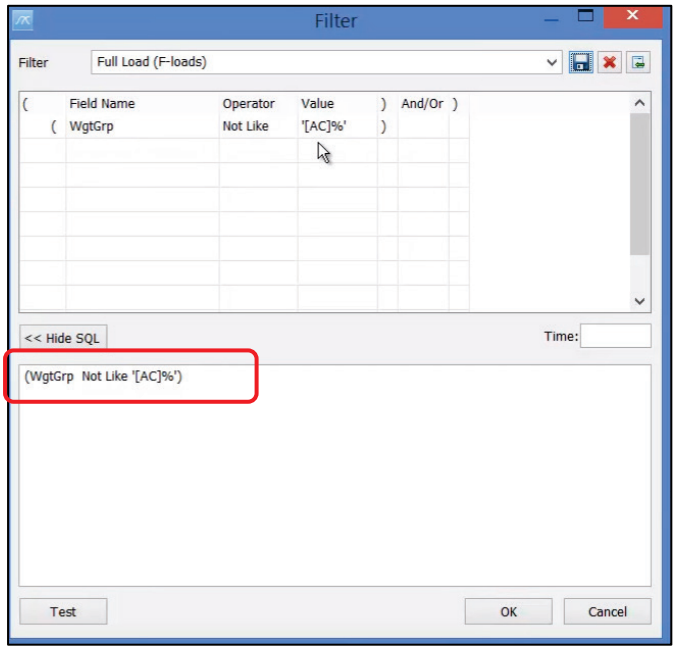
Then press the Save button.

In the window below we can see the global filter was created:

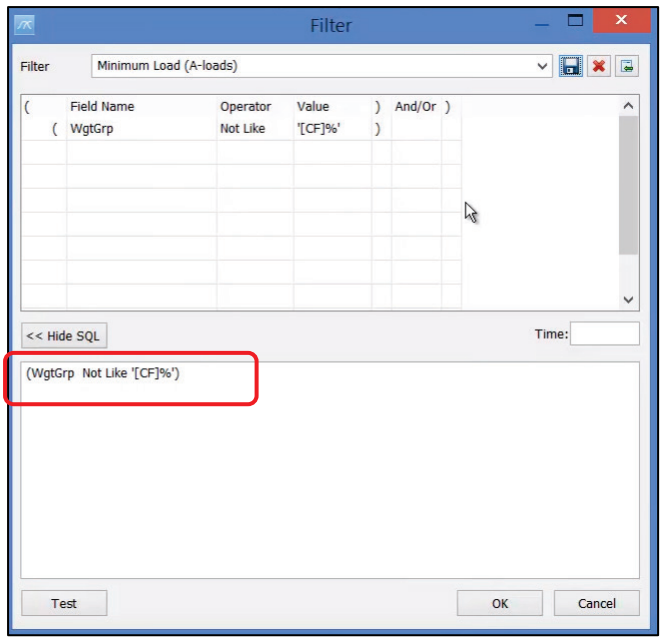


This filter means that we should not include weight groups that starts either with ACF and weight groups that starts with this having other letters or numbers after these letters (this is what the percentage % represents).

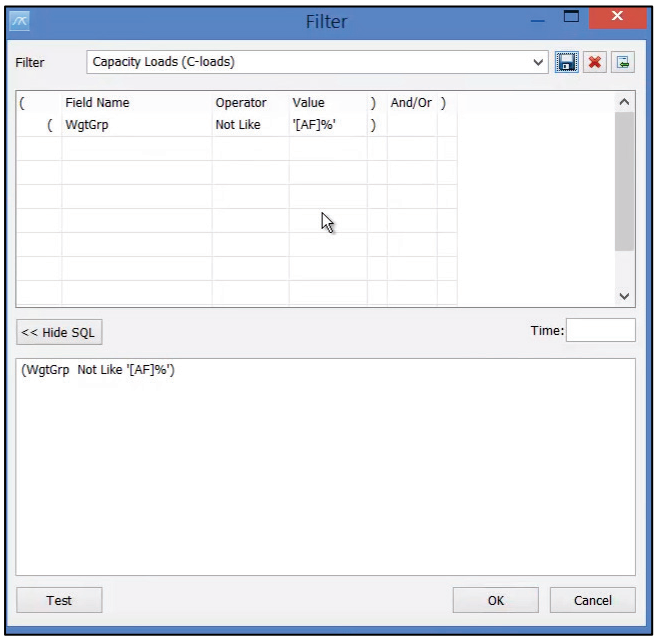
Now, we will create a filter for the full load condition:



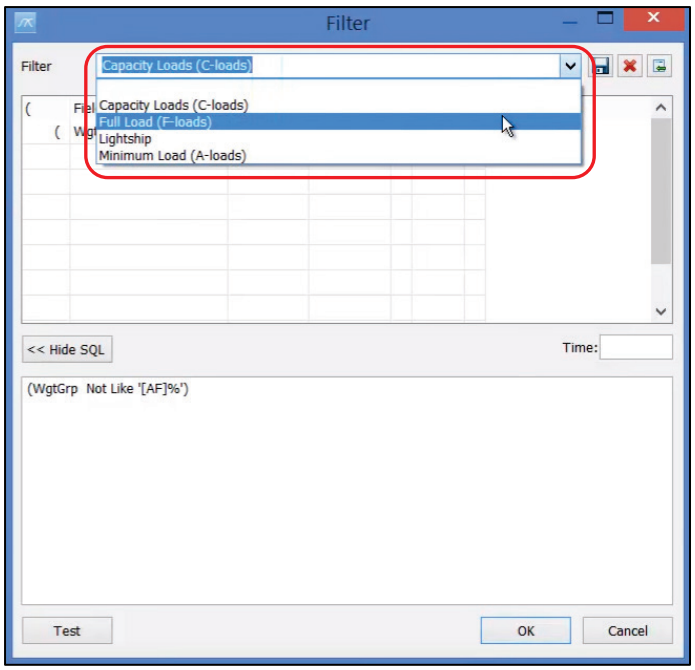
And also define minimum load filter:



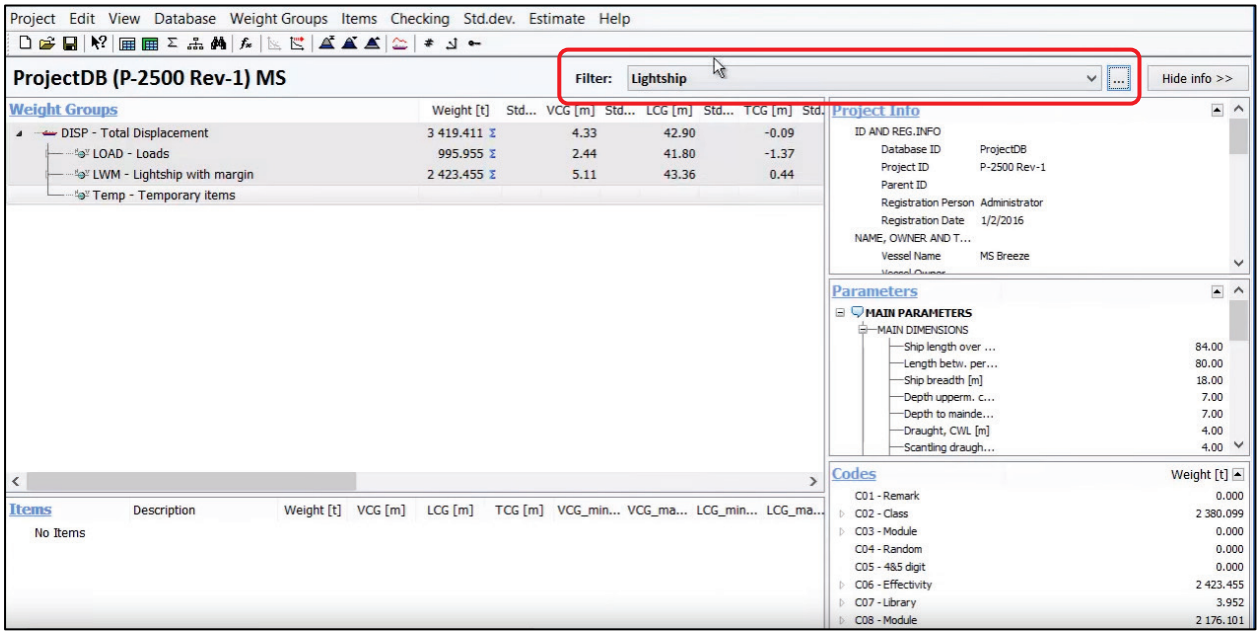
And finally the Capacity loads filter:



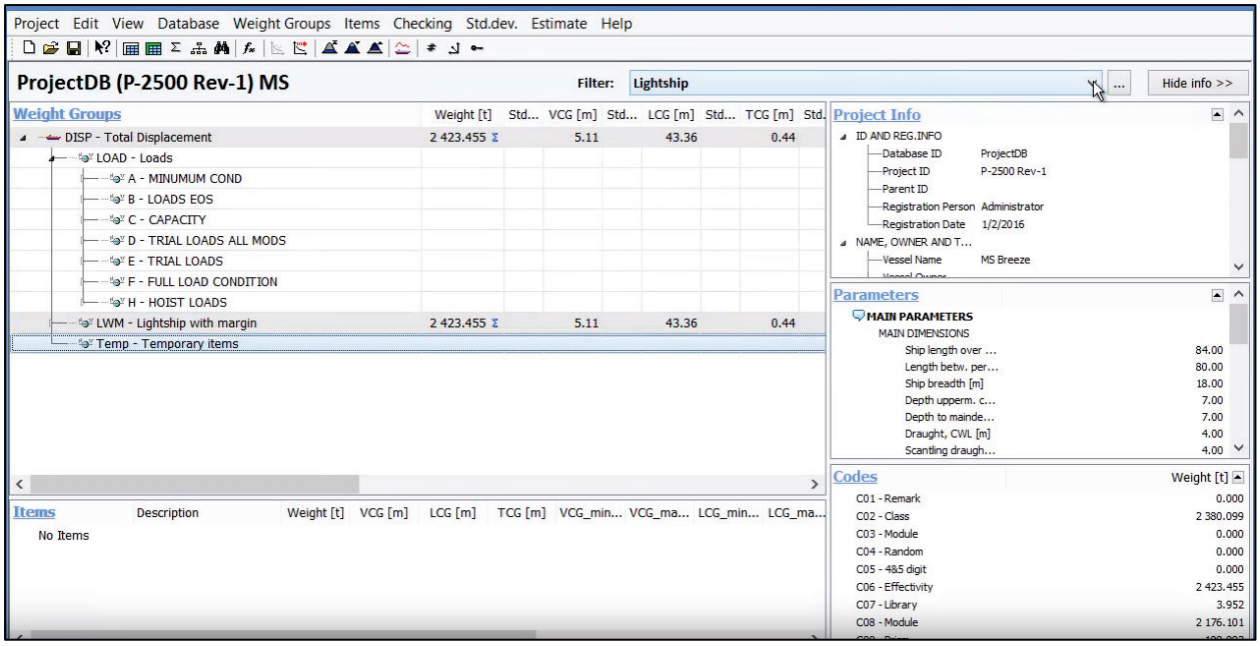
So now, all the needed filters are created and available in the dropdown list:



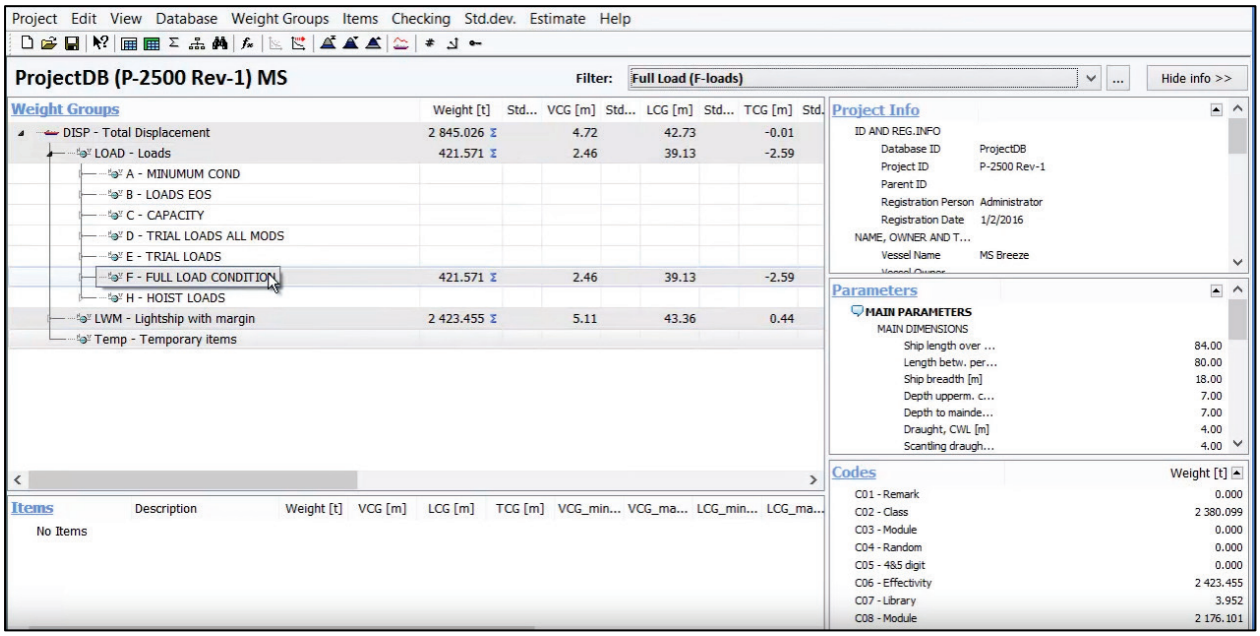
Select from the list, the Lightship filter and then press OK. It will be visible in the Filter area:



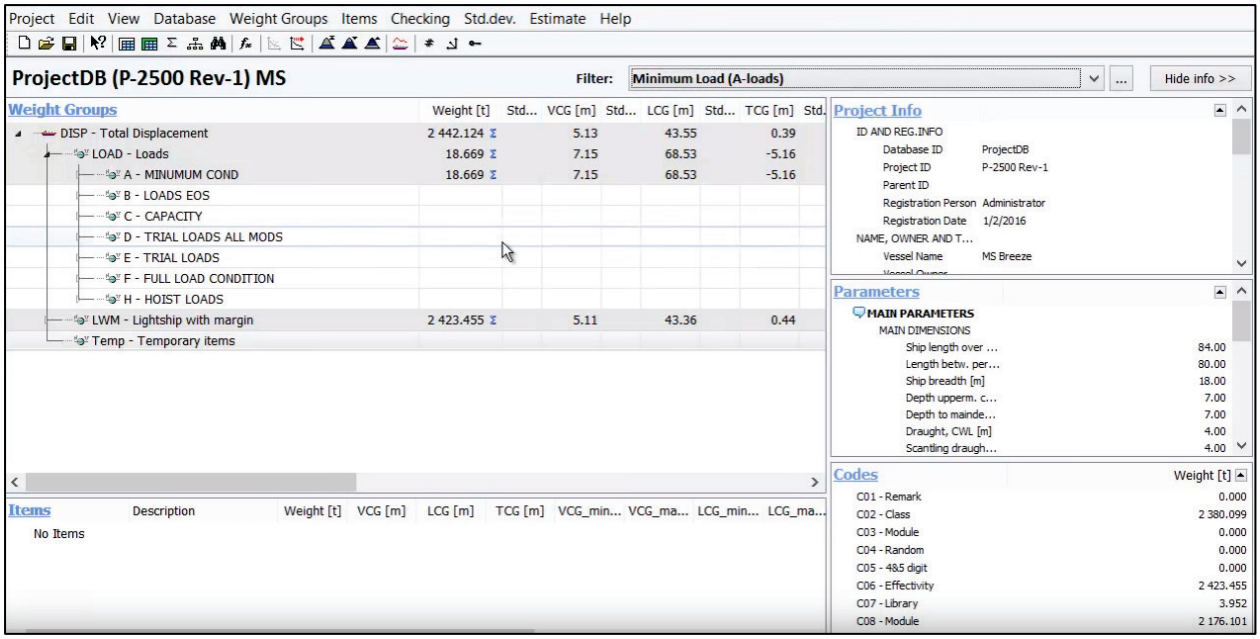
Starting with the lightship filter, it will remove all the other loads, and we are left only with the lightship:



Now if we pick from the filter's list the Full load, it will show in the tree the lightship and also the full loads values:



We can also check Minimum Load filter:

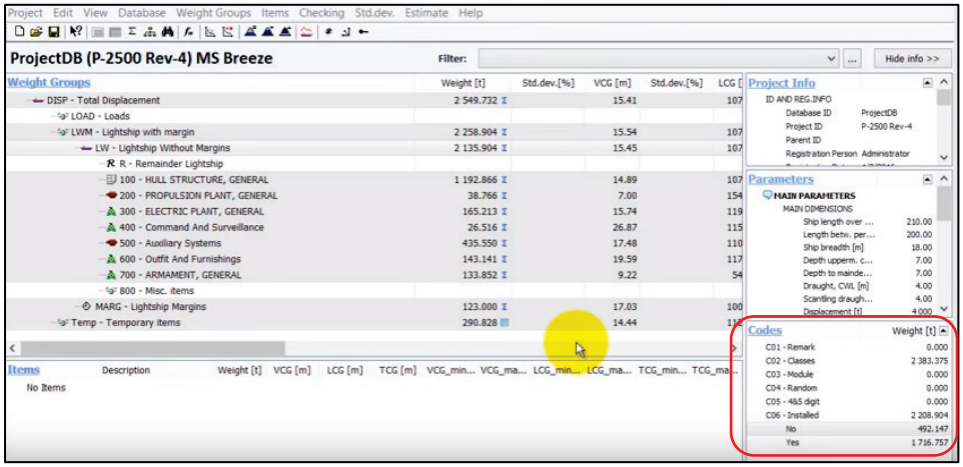


All the filters are global, meaing that they will be valid, not only for the main screen, but also for the item window, without the details, now we only see A Loads and Lightship items, and also when running weight distribution curve, gyradius, etc. then these functions in the ShipWeight application can now be run for these global filter settings.

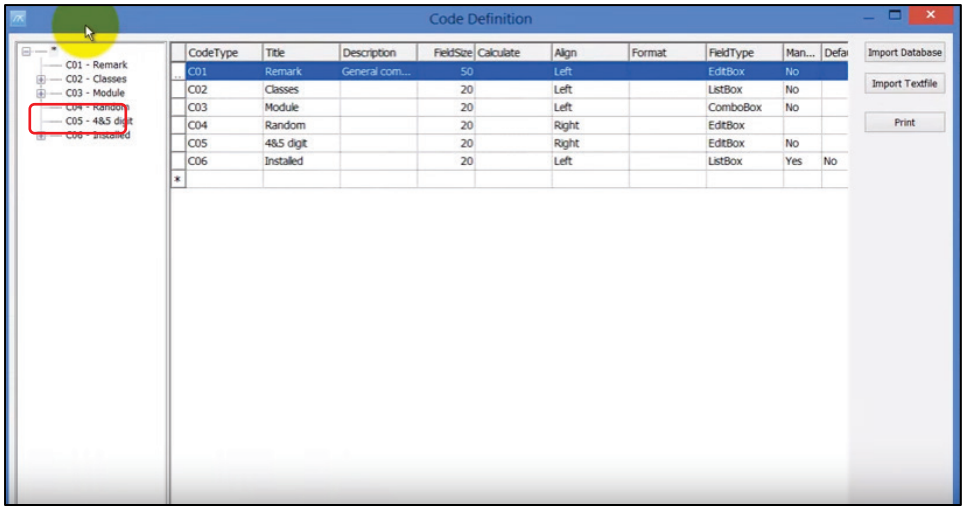
Step 9: Running a Displacement Test Report

In this chapter we will look at how to calculate a new lightship and center of gravity weight after a displacement and inclining test have been done. We will do this by setting up a project to hold temporary items and to distinguish between installed and uninstalled items and then we will use Crystal reports to calculate the lightship and center of gravity.

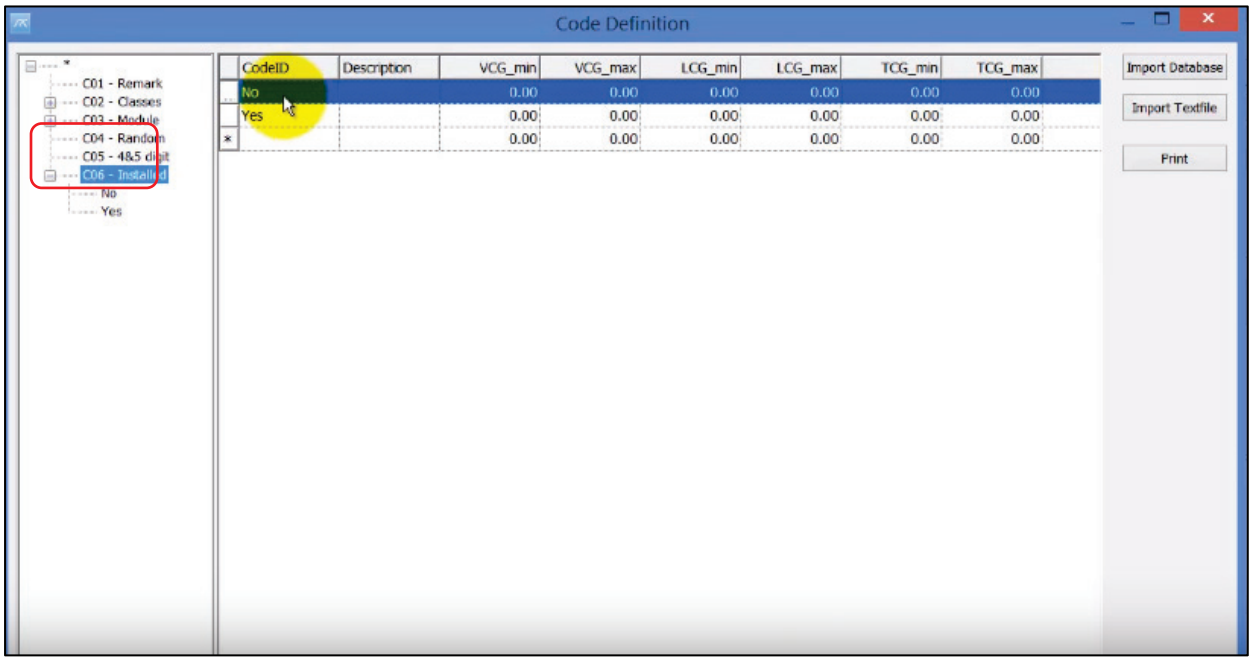
Right now we are looking at a project and in this project we have already created some custom codes:



And we called the needed custom code C06 installed:

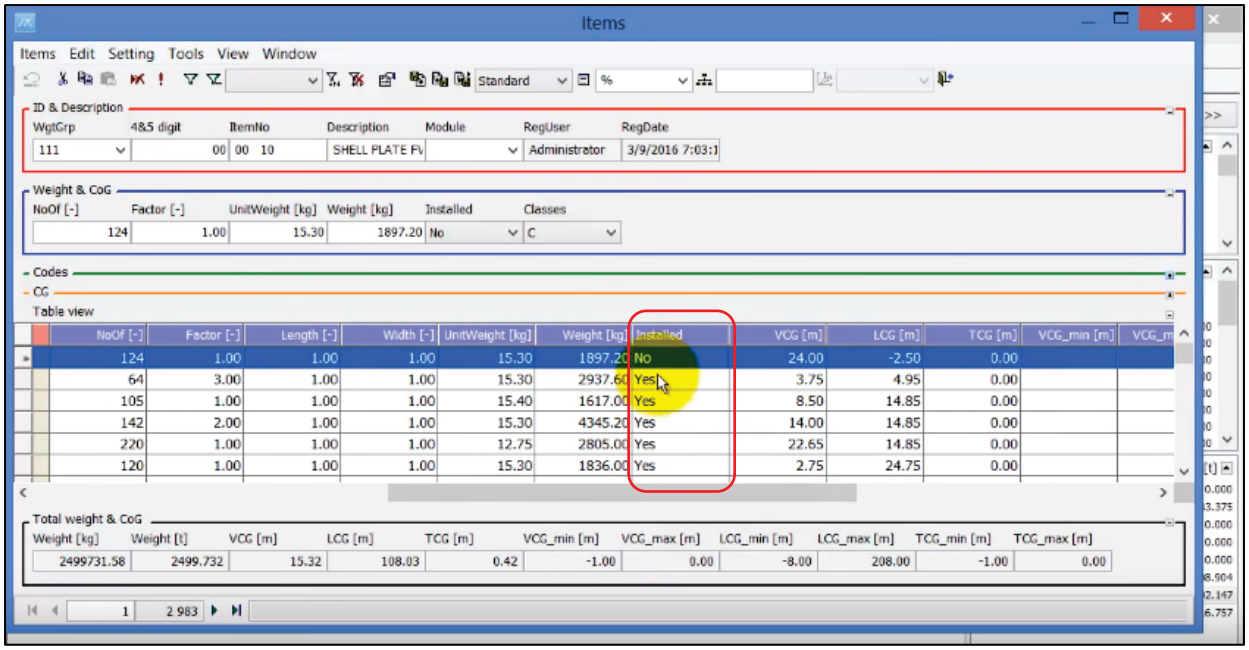


The C06 code it is a listbox with two subcodes No and Yes:

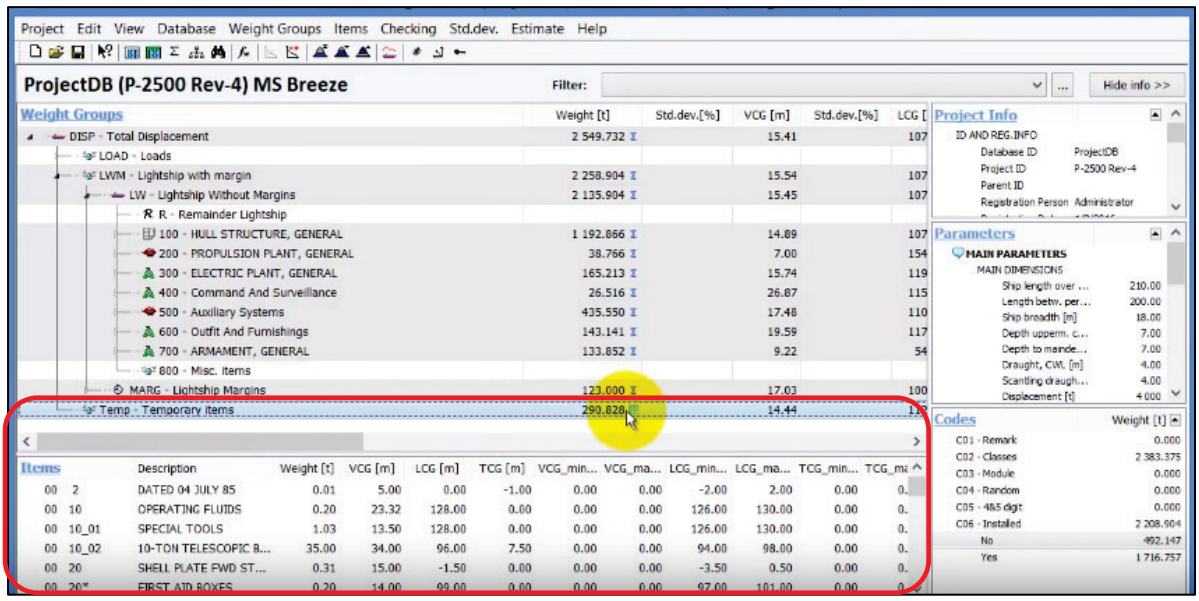


The naming of the custom code and the CodeID can be anything you choose. We need to have this custom code to distinguish wether an item is installed or not installed on the vessel.

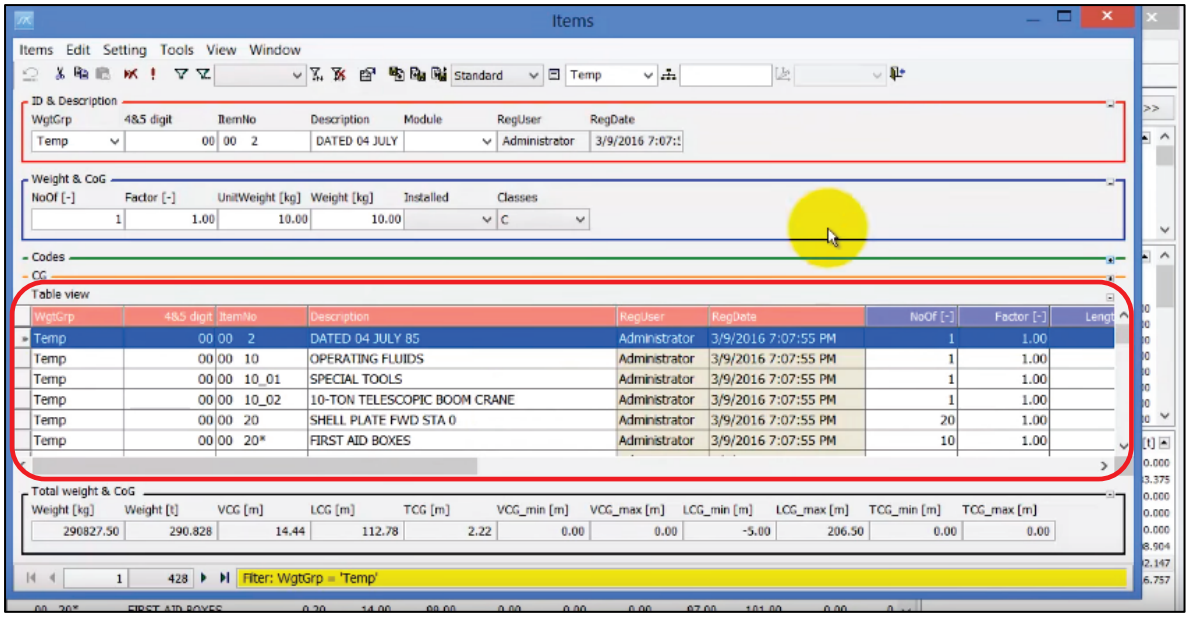
In the Items window these items are tagged in this way, so in this word there is nothing special about the code:



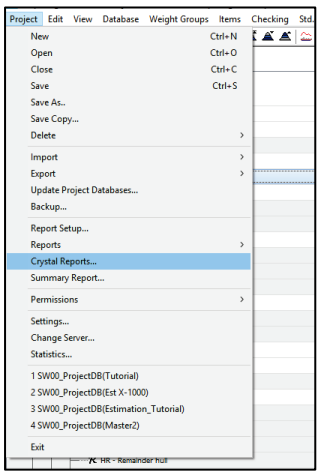
Another thing we need to do is to put all items that are on the vessel, but they are not part of the lightship weight, in other words they are temporary items that are onboard vessel during the displacement and inclining test, but should not be there during the delivery of the vessel and should not be included in the lightship weight. And these items, we have addded them to the temporary group:



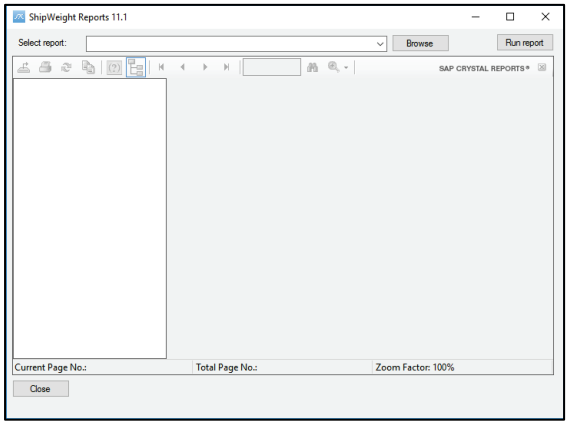
So the temporary group have now a list of items that will be taken off before the dlivery of the vessel:



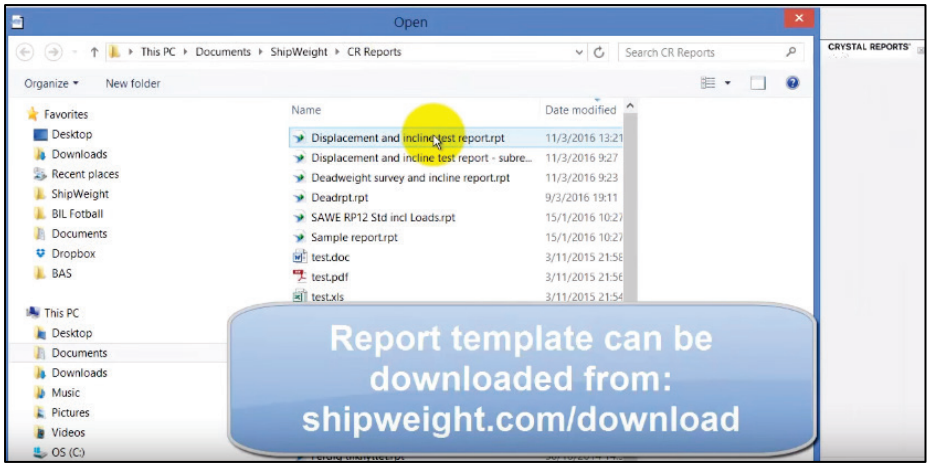
Now go to Project menu and find Crystal Reports:



To open up the crystal reports viewer:

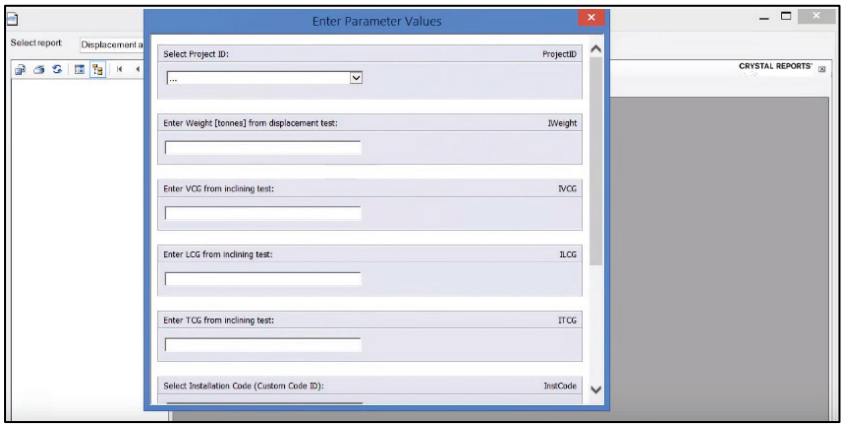


And here you press Browse button and find the *Displacement and Incline test report.rpt*

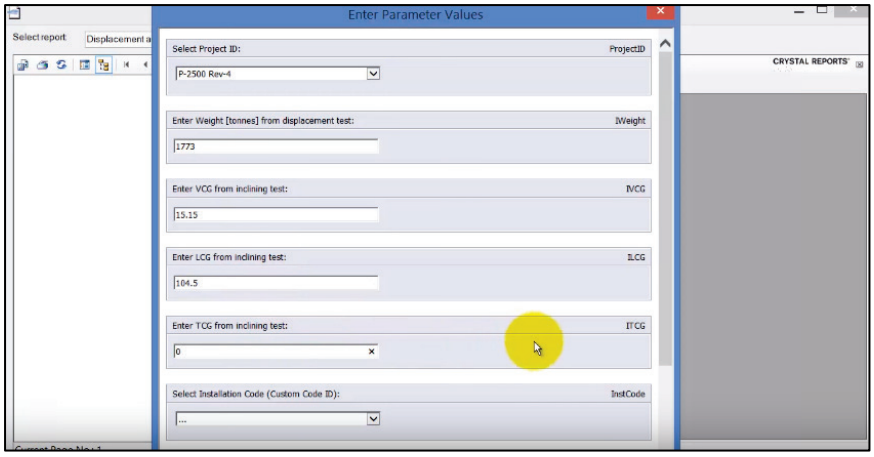


Then, you can simply press the Run report button:

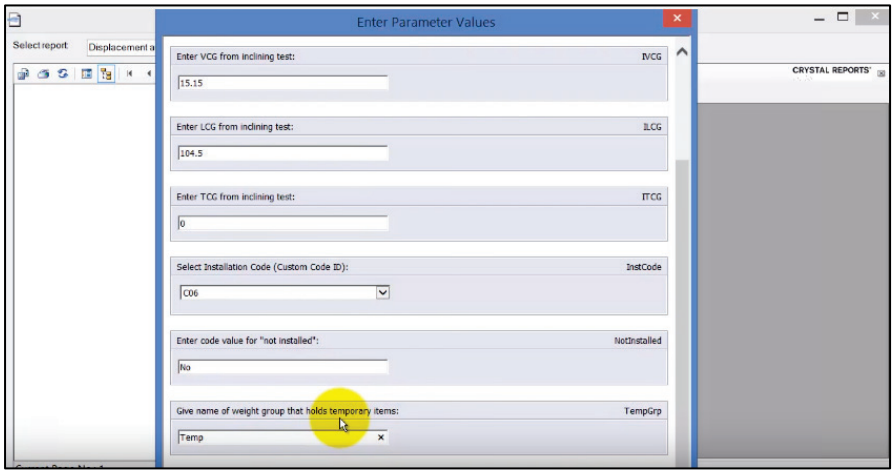
And then the Filter window opens up, to allow you to input some parameters:



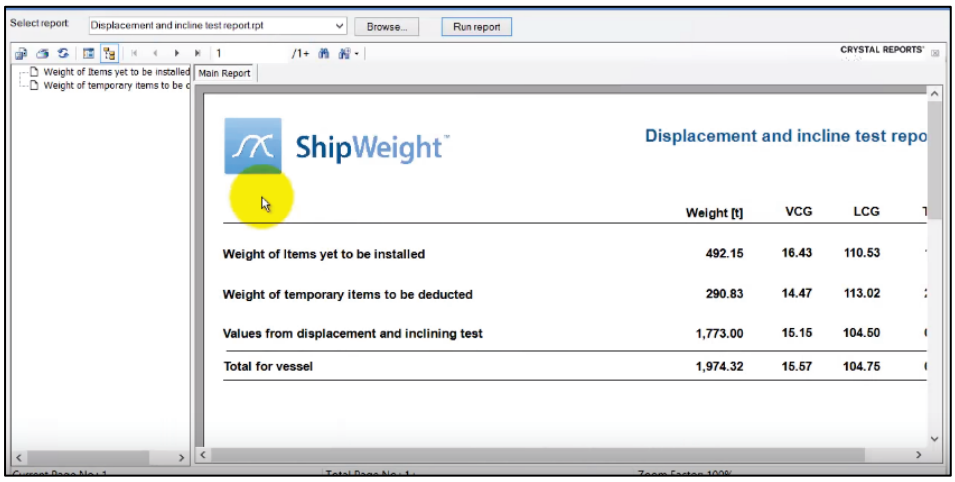
Fill in the parameters:



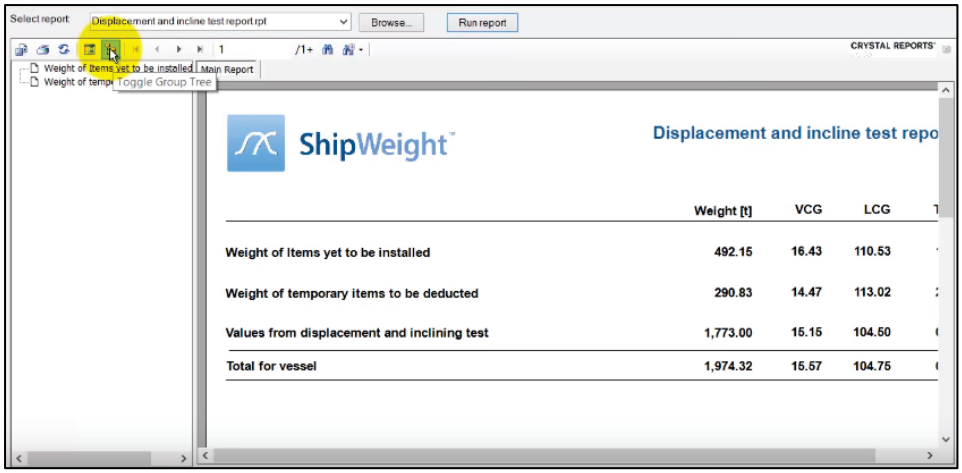
And more down below:



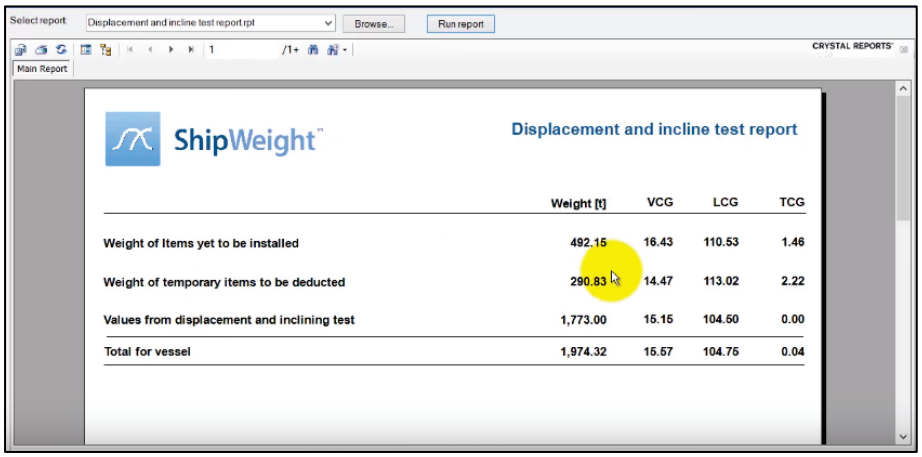
Now click OK button and the report is running:



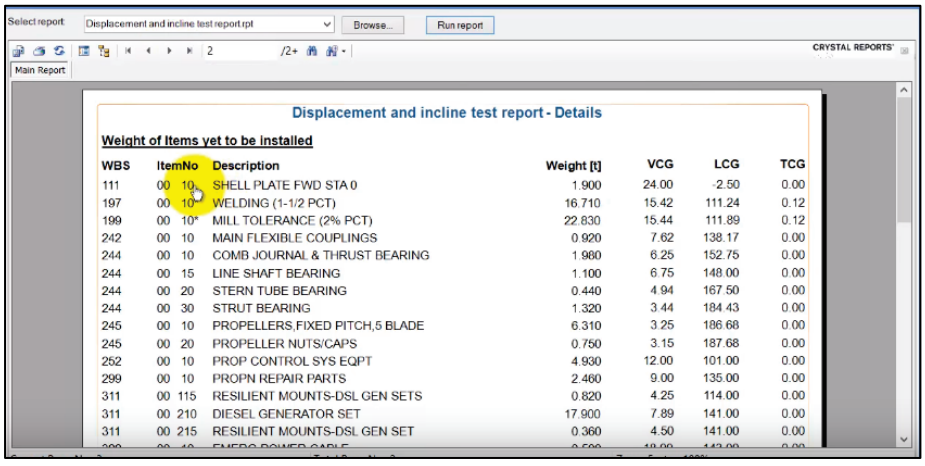
And the report has at least two pages:



One summary page showing the weight and center of gravity:

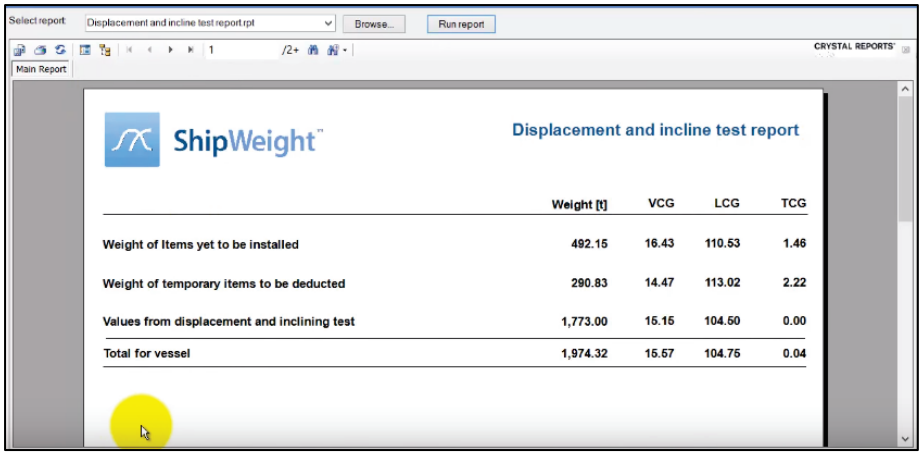


The next page starts to list the details of the weight of the items yet to be installed:



And later on also the details of the items in the temporary groups.

And then is the summary on the main page:

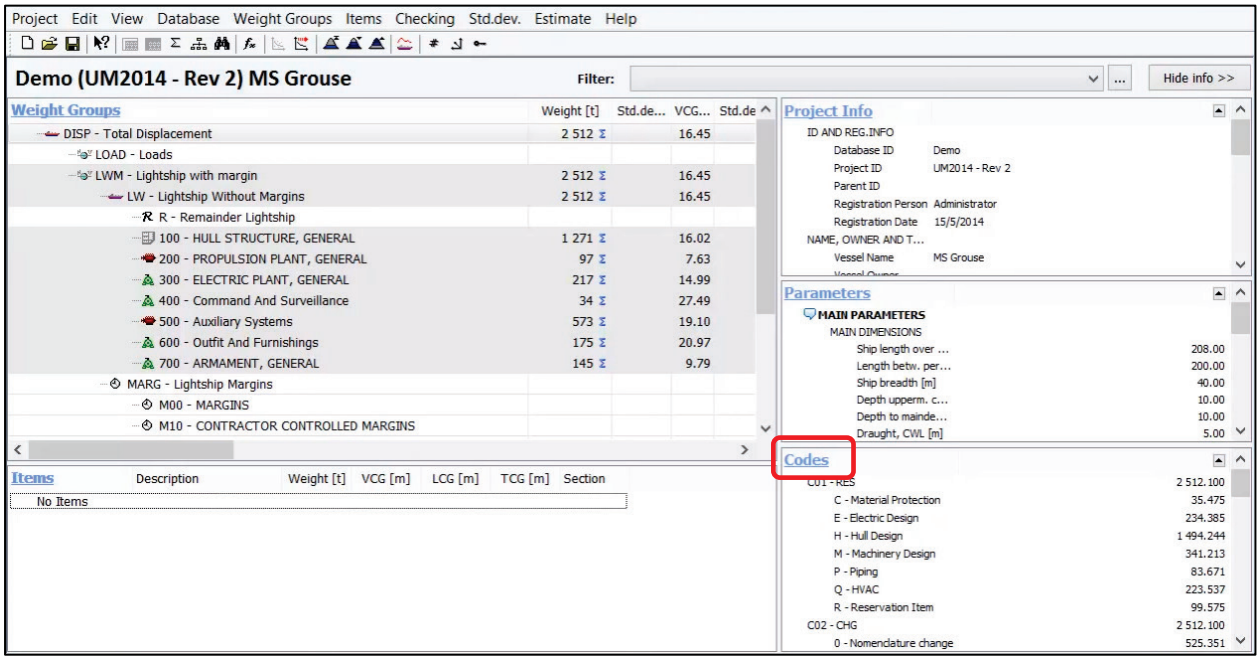

Select report
Displacement and incline test report.rpt
Browse...
Run report
Main Report
CRYSTAL REPORTS
ShipWeight
Displacement and incline test report
Weight [t] VCG LCG TCG
Weight of Items yet to be installed 492.15 16.43 110.53 1.46
Weight of temporary items to be deducted 290.83 14.47 113.02 2.22
Values from displacement and inclining test 1,773.00 15.15 104.50 0.00
Total for vessel 1,974.32 15.57 104.75 0.04

Phase Codes

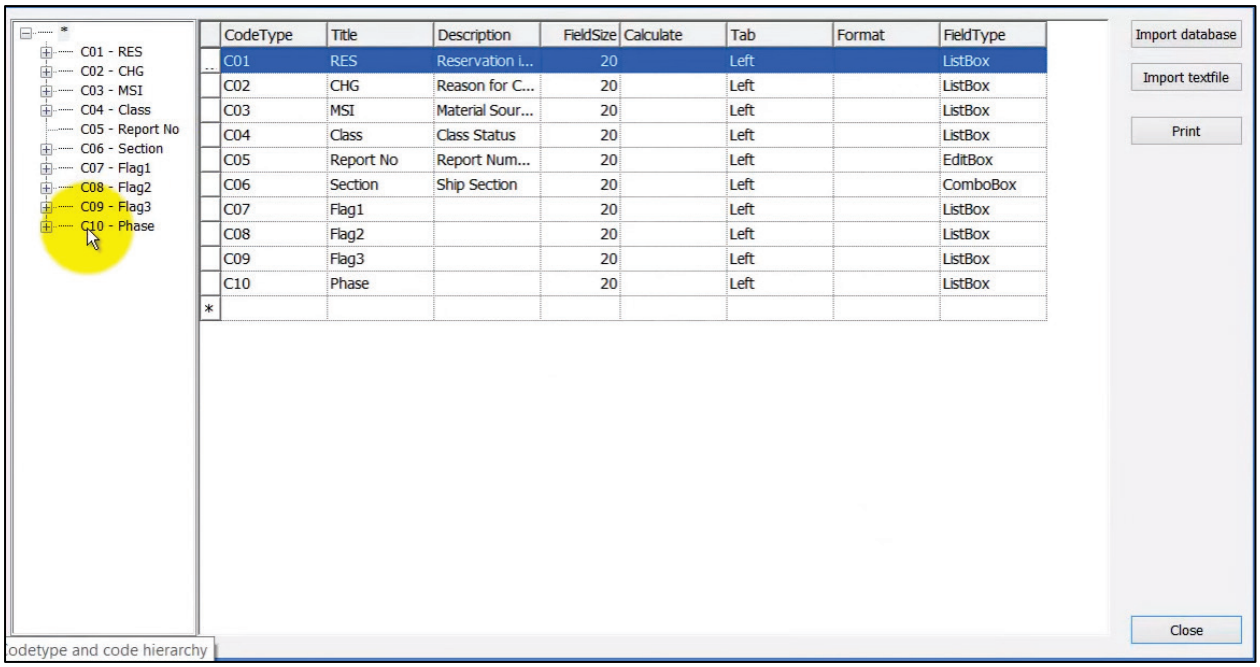
This section will into doing weight tracking for series production of vehicles with configuration changes raises some challenges. Using Phase Codes

Step 1: Define the Phase Code as Custom Code

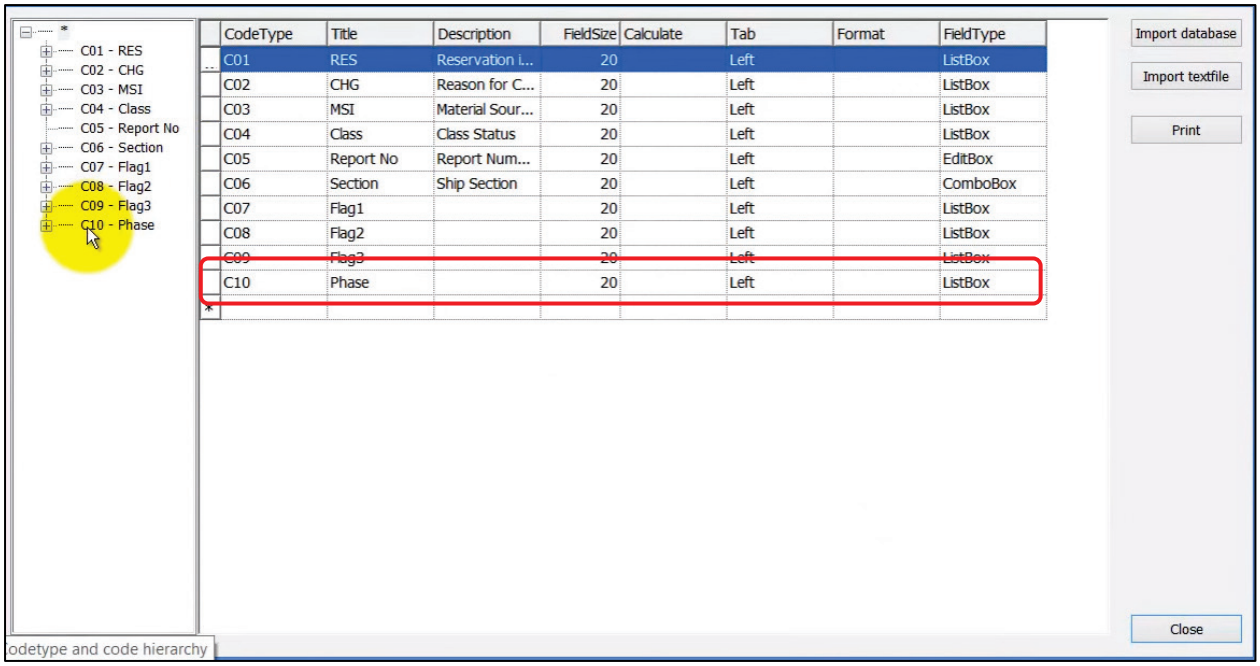
Open the code definition:



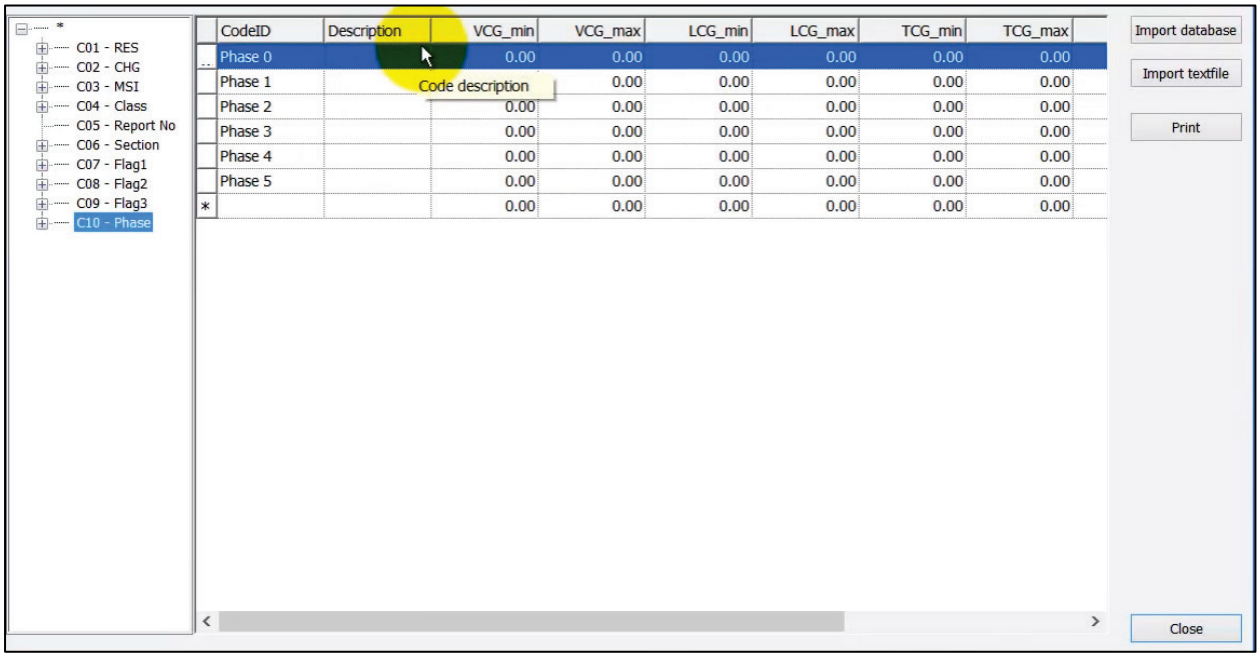
The Code Definition window will open:



Define a custom code as shown below:

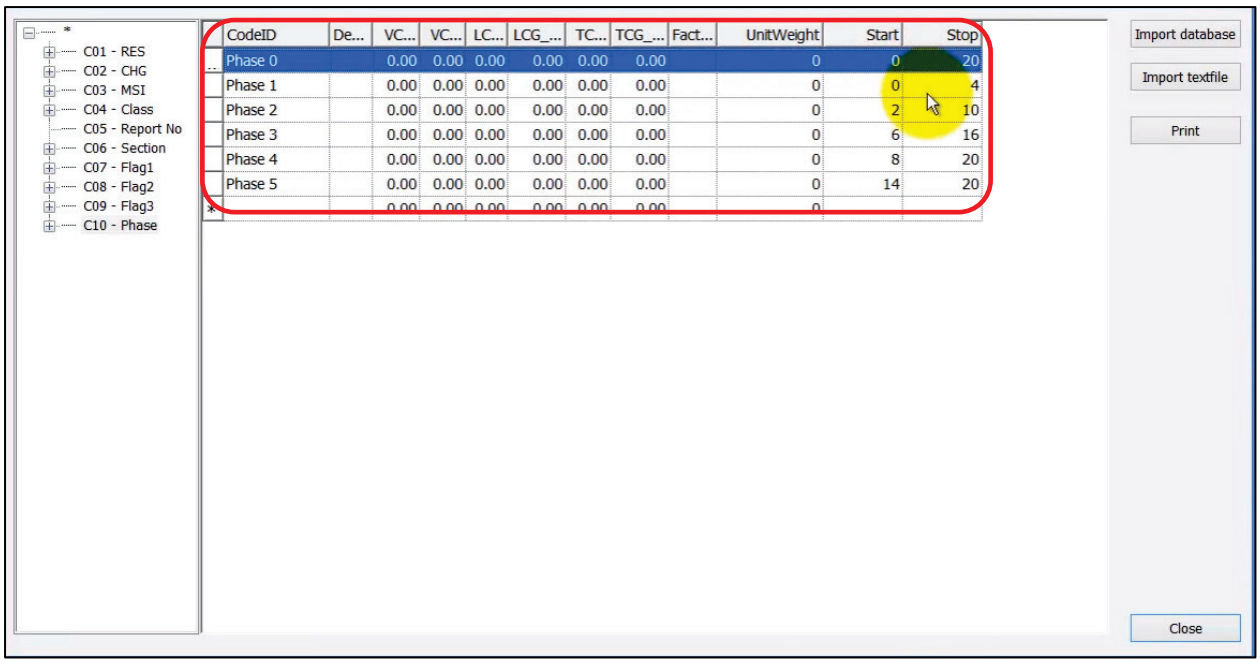


Next, define the Code ID for the custom code as shown below:



Step 2: Define the “Start” and “Stop” Entries for the Phases

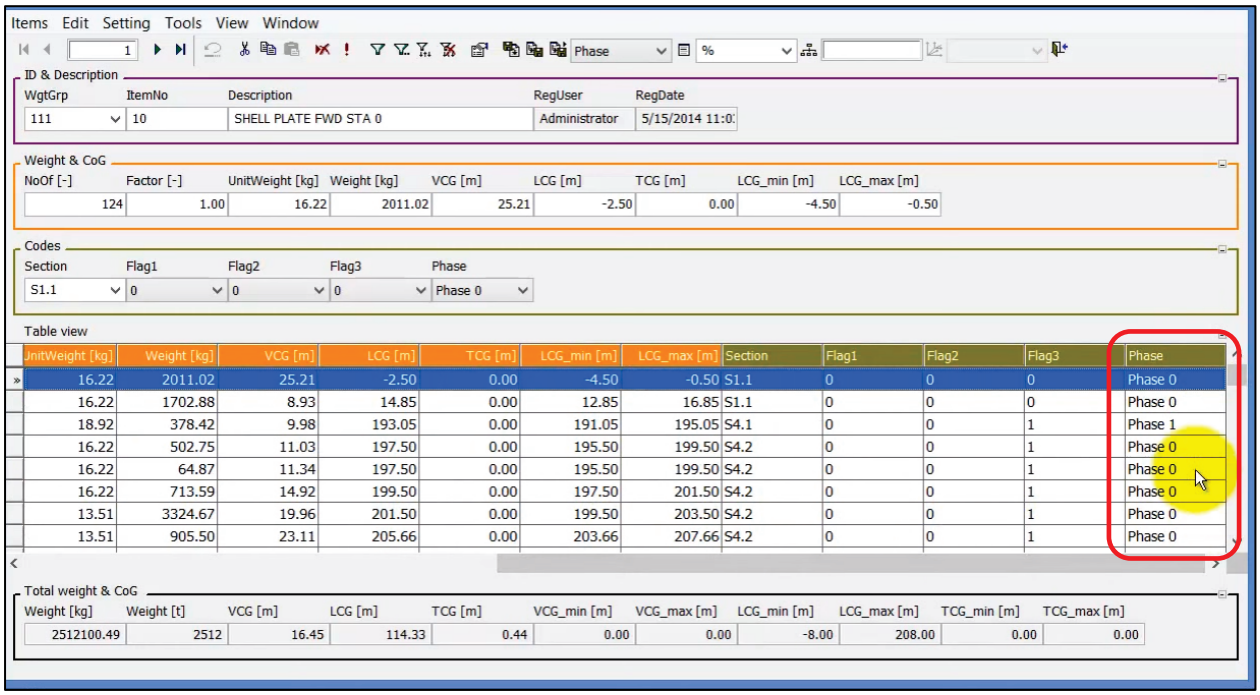
This is just like any normal custom code. But the special thing is that at the end of this table where we can define the codes we added two columns **Start** and **Stop** (which are the same values as in the previous example):



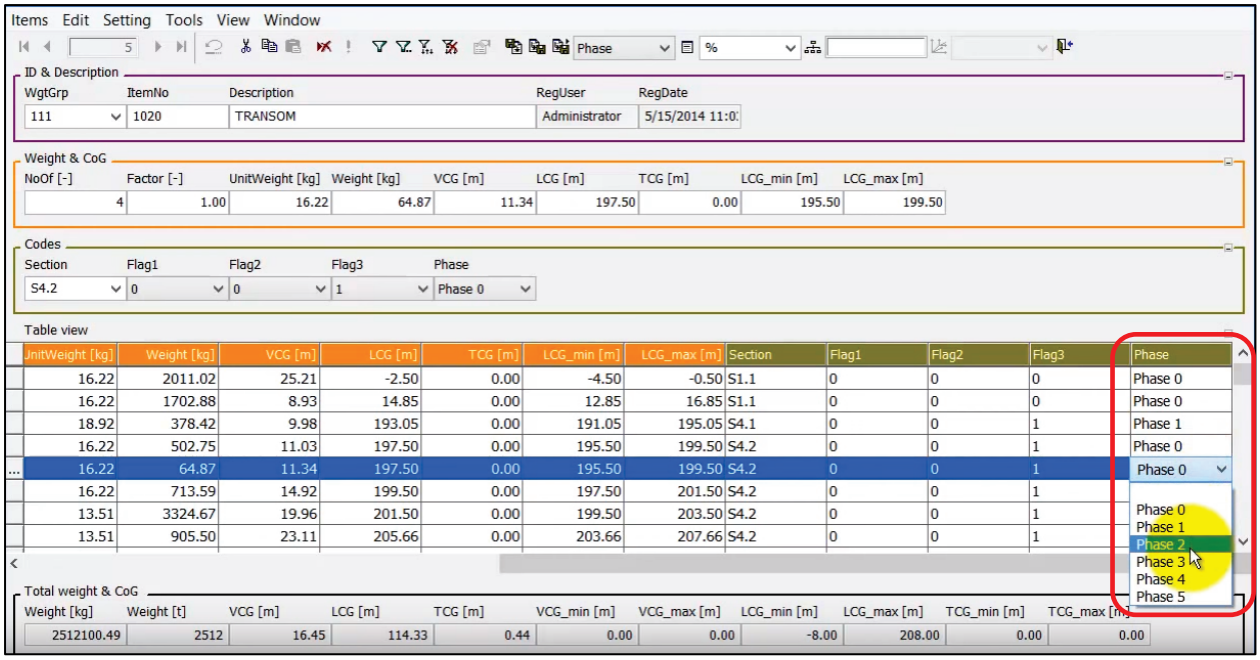
Now Close the Code Definition window.

Step 3: Tag the Weight Items to the Phase Codes

In the Items window, items will be tagged to the phase code in a normal way:

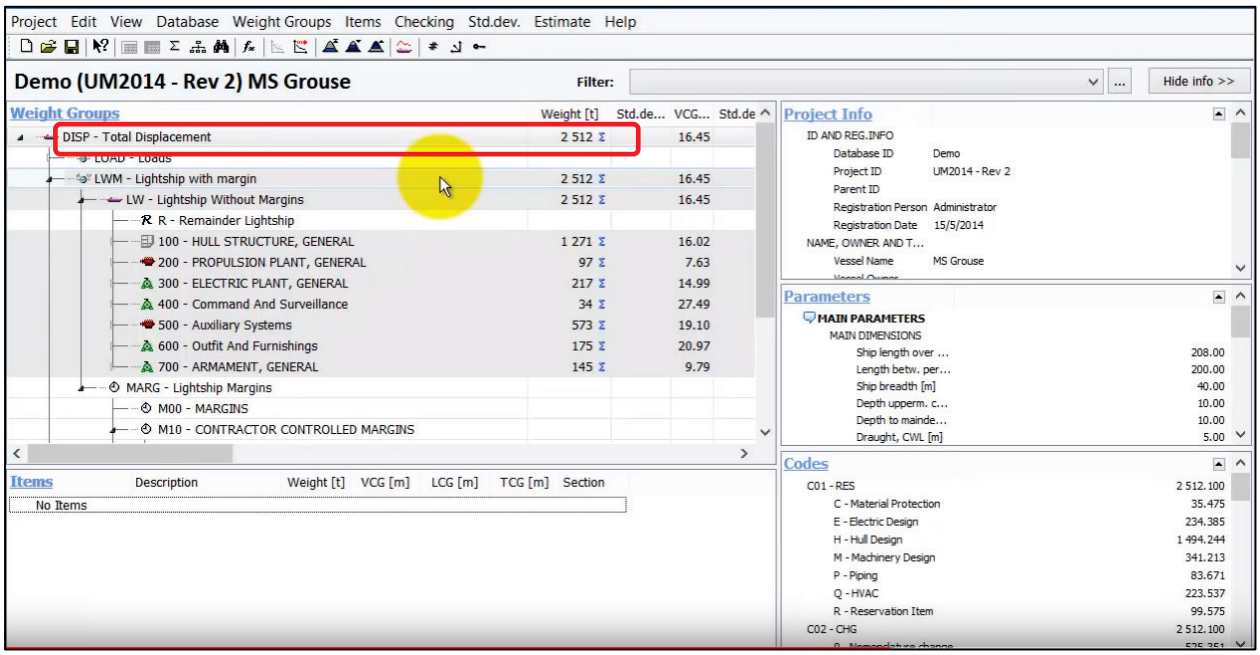


You can anytime set a different phase for any item:



Now we have to do the “slicing”, menaing we have to filter out only the items relevant for the vessel we want to know the weight and CG of…

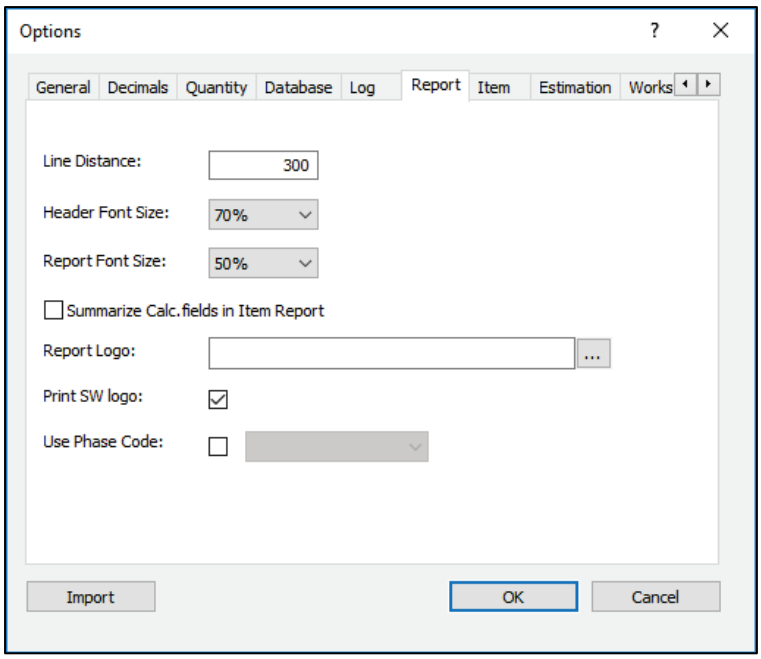
Because right now the total displacement shows 2512 tonnes, will be the summary of all items, meaning the summary of all phases, which is not any particular vessel:



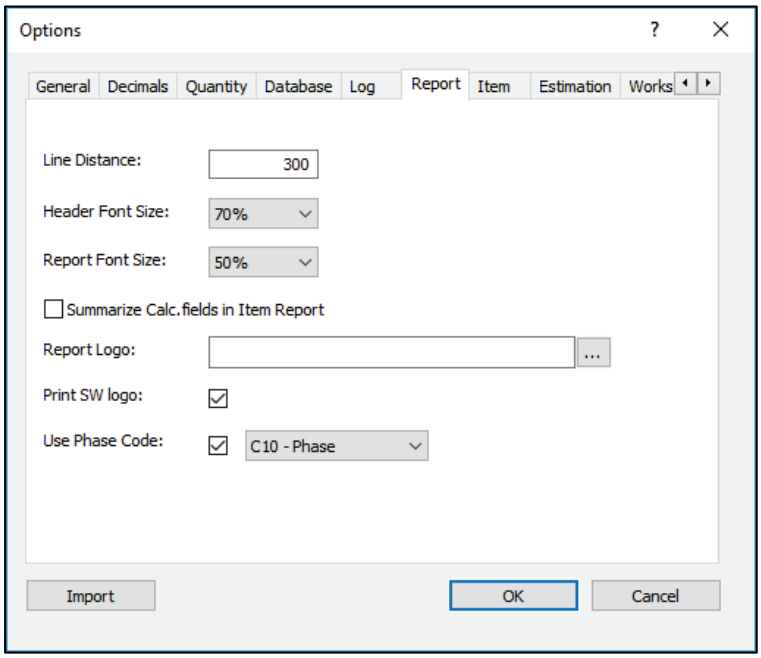
Step 4. Define the Global Filters for the Phases

To get the weight and center of gravity for a particular vessel, we need to apply a global filter for this one vessel.

To be able to do that there is one thing we need to do first, to set in the options window (View -> Options), and go to the Report tab:

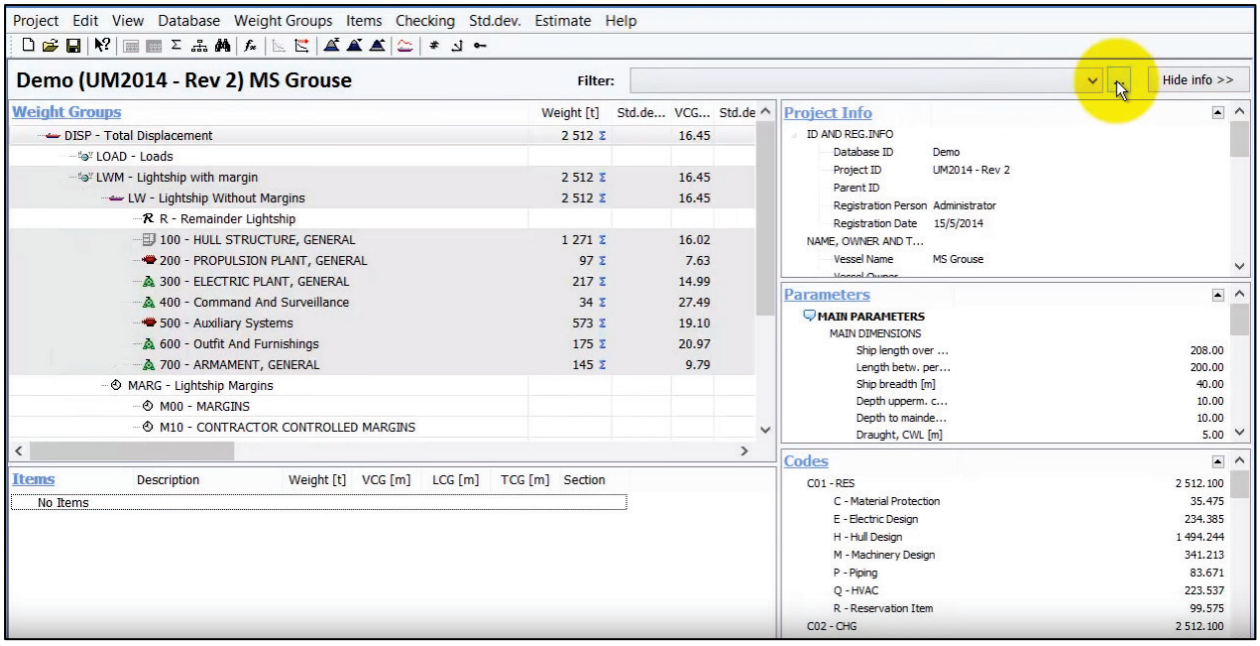


You will see that last option **Use Phase Code**. Check the box and select from the list C10 – Phase:

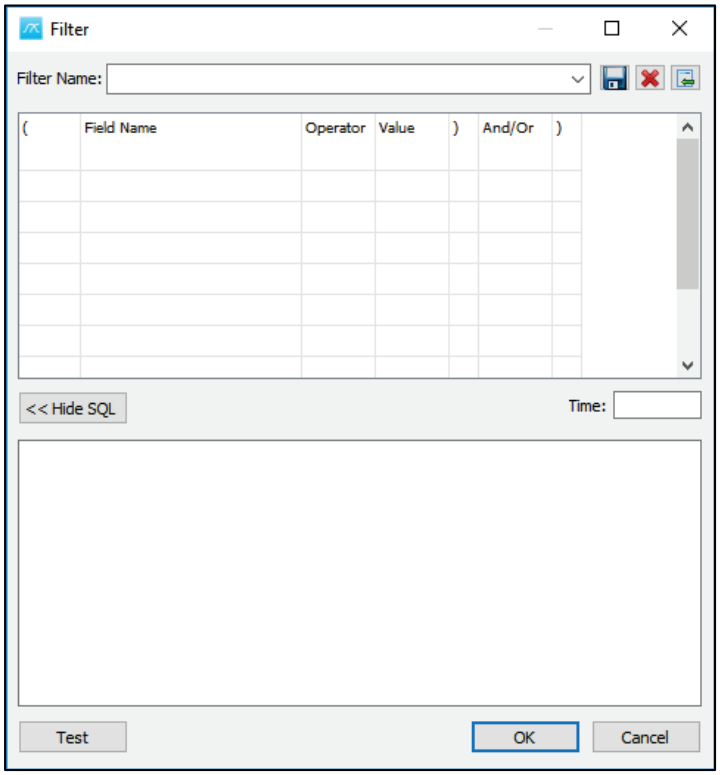


And then press **OK**.

Now we can set up a global filter for each individual vessel. And this is done in the global filter window:

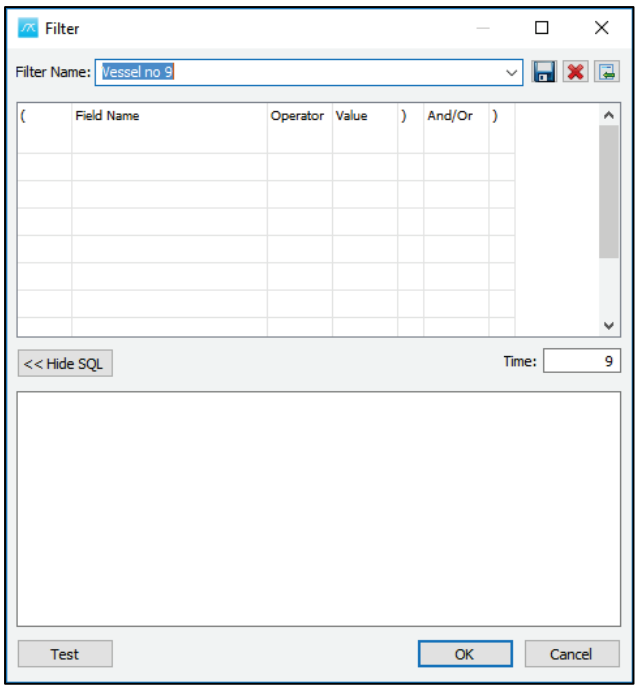


Click the browse button to get the filter window:



And in the global filter window, we can see we are able to define any type of filter.

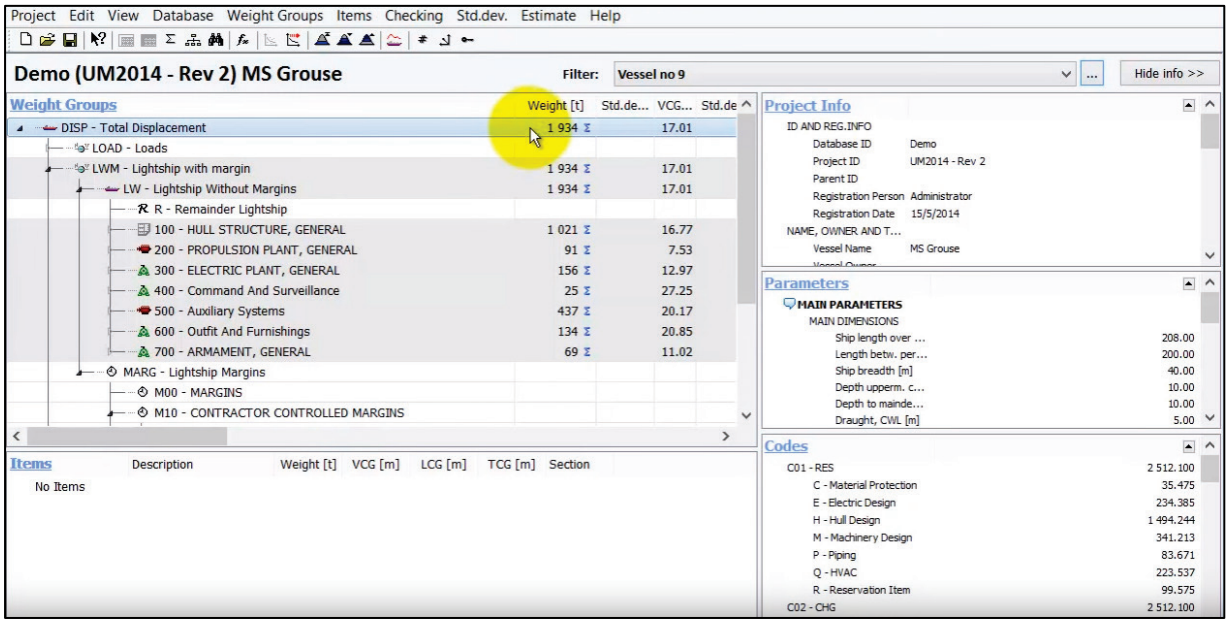
Give a **Time**, then a **Filter Name,** and then press the Save button:



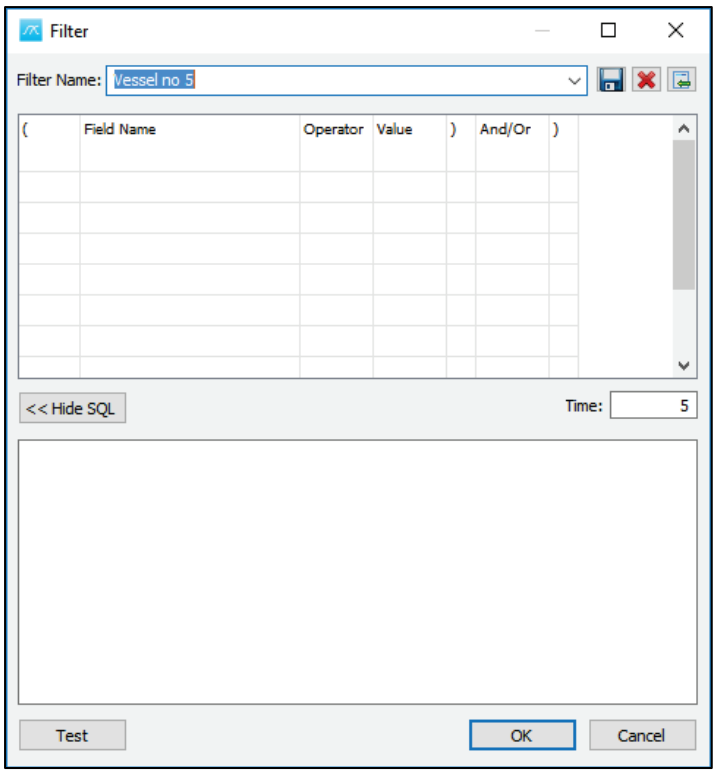
Then click OK.

Step 5: Activate the Global Settings for the Phase Code

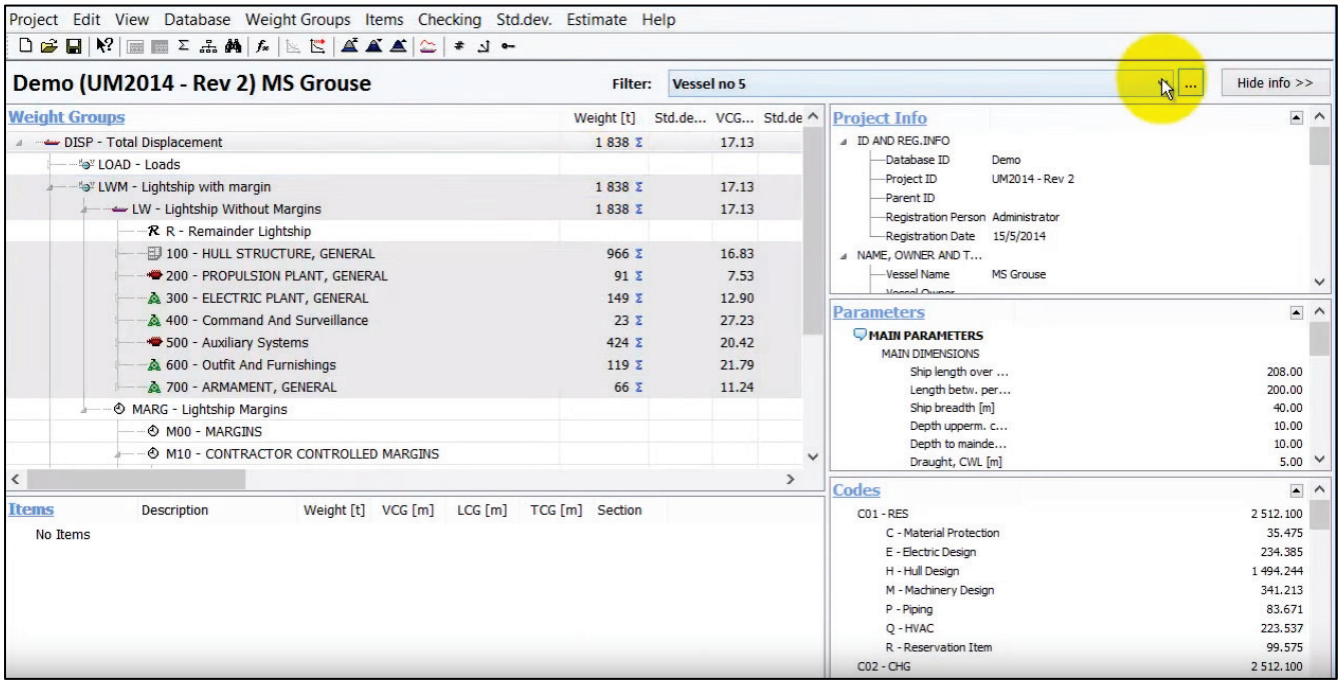
The filter will be activated and we will see that now in the main window the weight will be reduced from 2510 to 1934 tones. And this is the weight for vessel number 9.



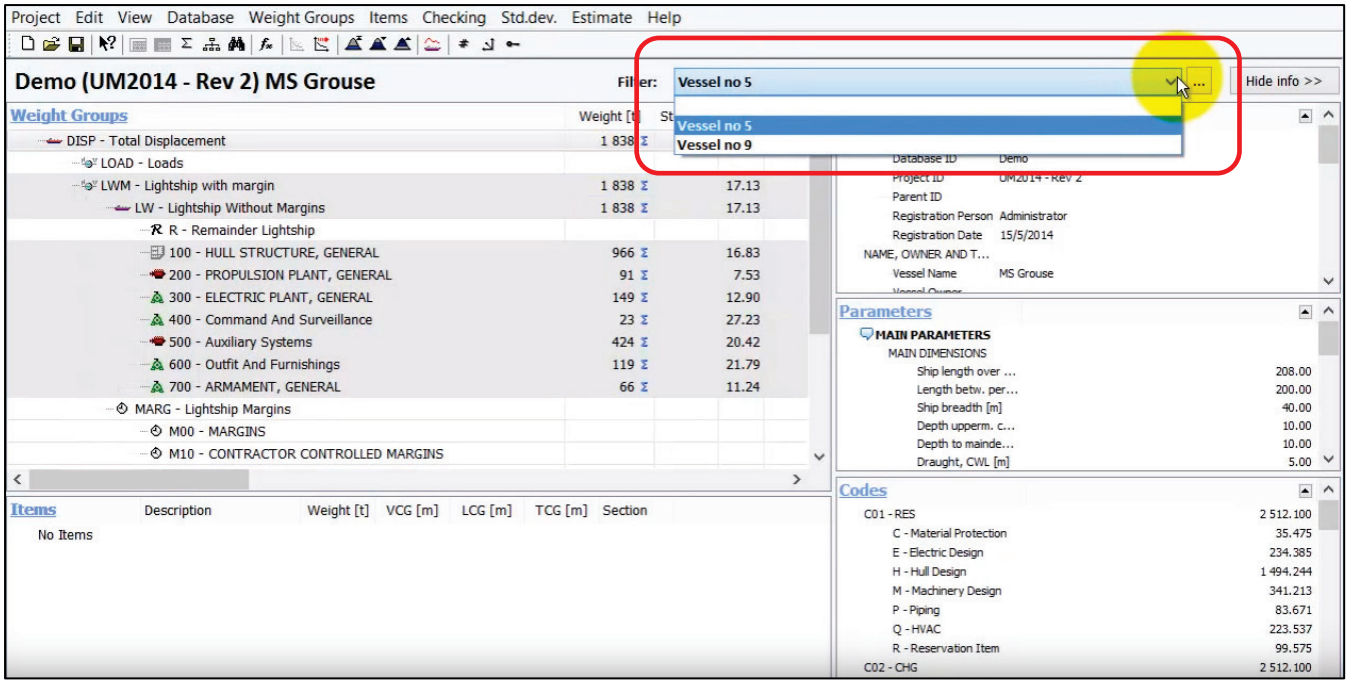
To change the vessel numer, press again on browse button and change the Time and Filter name:



Save and press OK. And now the weight and CG have changed based on vessel no. 5:



Now we have two existing filters:



And we can change anytime between vessel no.5 and no.9.

When we enable filters, is not only the CG from the main window that changes, but now everything in ShipWeight changes according to this filter. So, if we go to the Items window we will see items belonging only to vessel no. 5 if the filter is Vessel no 5.

More on the Phase Code Concept

Phase coding means looking at the series production as a timeline, where:

- The timeline is starting with vessel 1 and ending at vessel n.
- The user defines the necessary phases, ranging from any start and endpoint on the timeline
- Weight items are tagged to a phase, meaning that they are to be included for vehicles in this phase

The total weight of an individual vehicle is the sum of all items tagged to the phases that the time of the vehicle corresponds to.

The advantages of the Phase Code Approach can be summaries in these points:

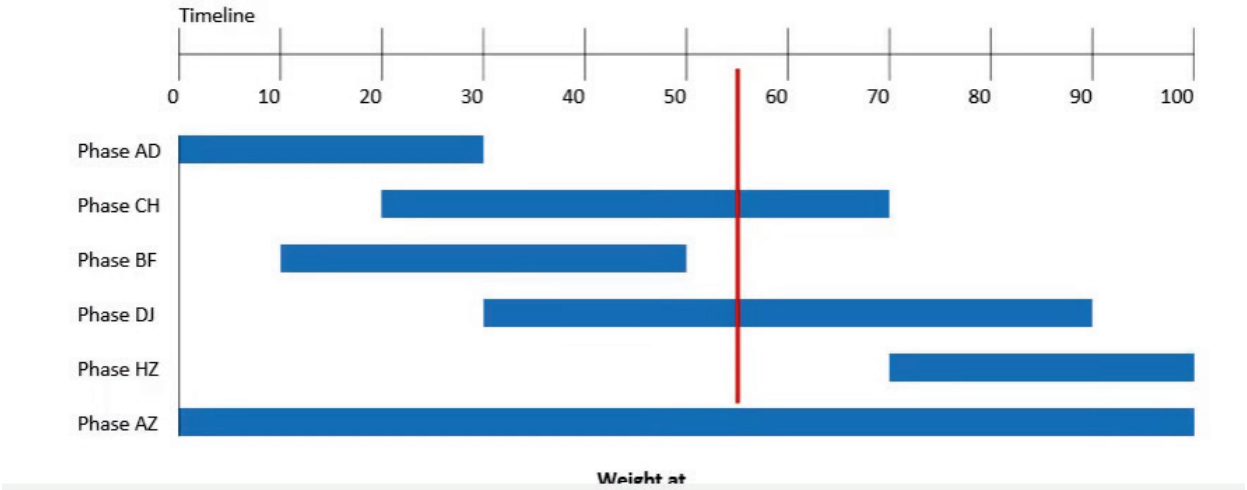
- Items are only needed once (one row) in the database regardless of how many vehicles are in the production line
- It is easy to deploy weight items to a range of vehicles, and to change the extent of the range
- You can easily find the weight of an individual vehicle by slicing through the phases at the time of the vehicle
- Same approach can be used for multiple phases of a single vehicle throughout its life-cycle

Examples

Phase Codes

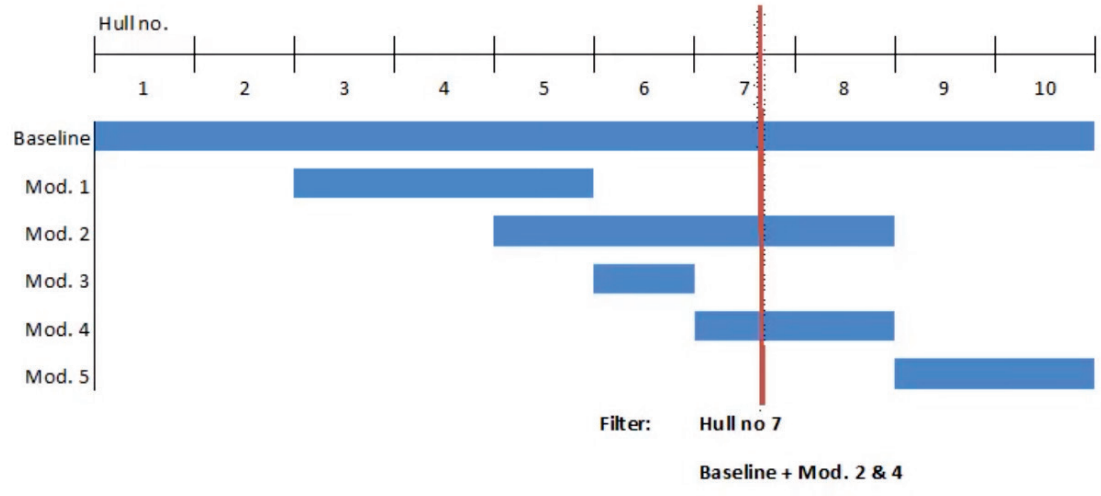
- Allowing to set ”Time In” and ”Time Out”
  - Defining the ”time” an item is to be included
- To be used when ”Flags” are not sufficient
- To be combined with Global Filter

Code	Time In	Time Out
Phase AD	0	30
Phase CH	20	70
Phase BF	10	50
Phase DJ	30	90
Phase HZ	70	100
Phase AZ	0	100



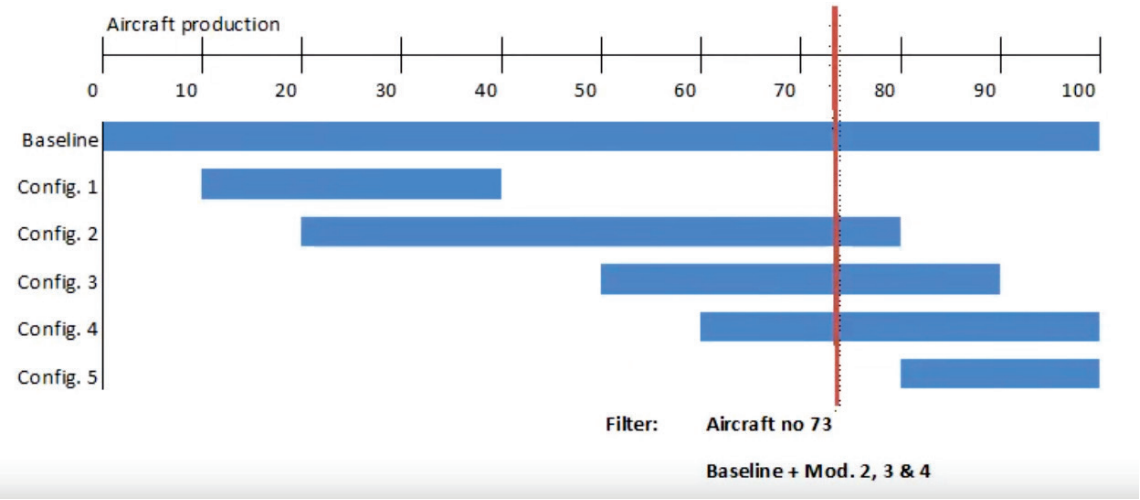
Examples:

Vessels: series of 10 monohull with modifications

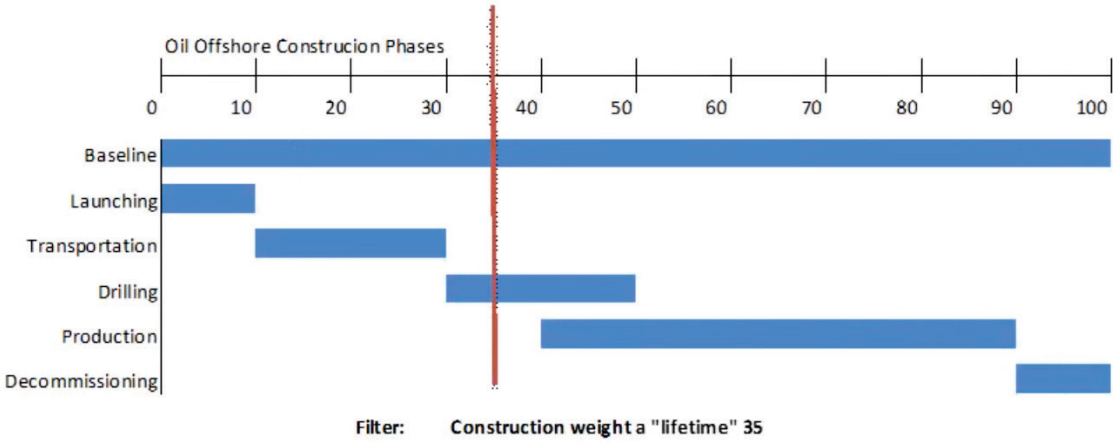


Aircrafts: aircraft series production

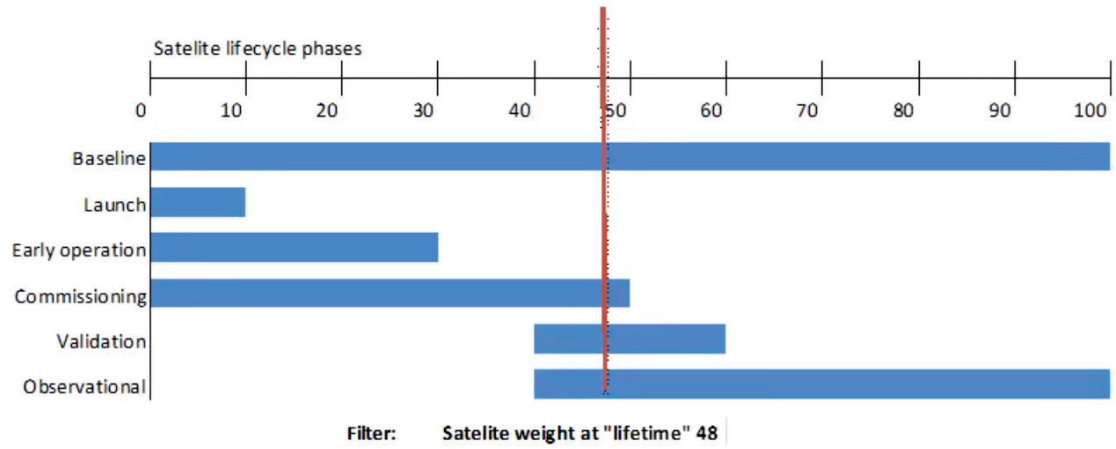
Various configurations during production:



Offshore construction: lifecycle phases of an offshore construction

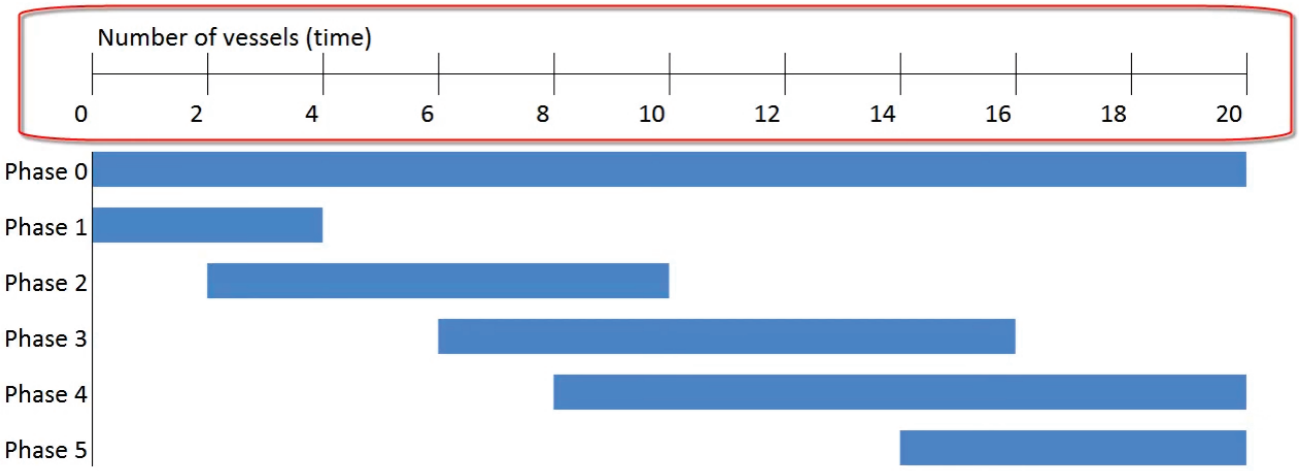


Satelite: satelite phases

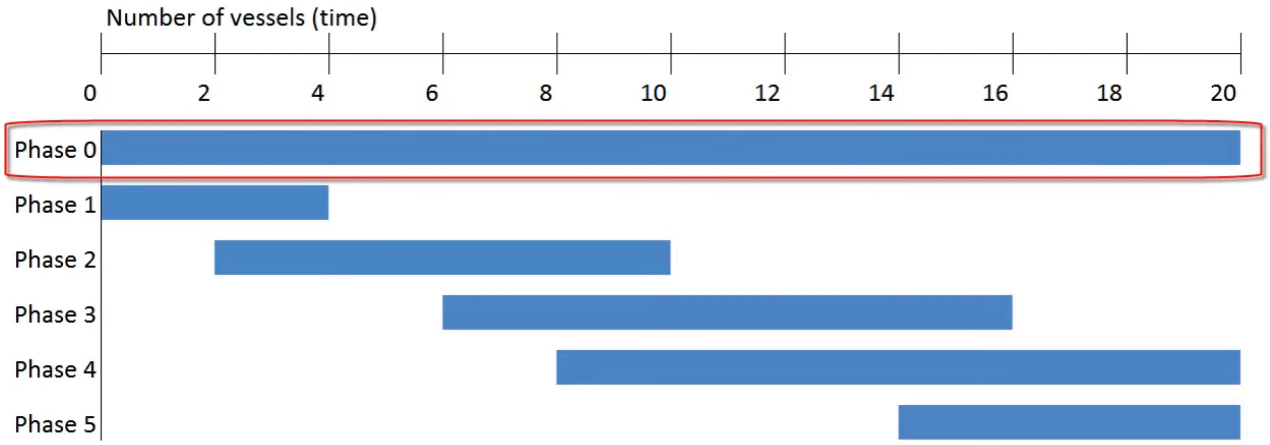


We consider the building of 20 vessels of the same class. Now this 20 vessels will not be completely identical, so we can not have them in only one project, but we can define phases containing the differences and use the phase codes to handle all 20 vessels still in one project.

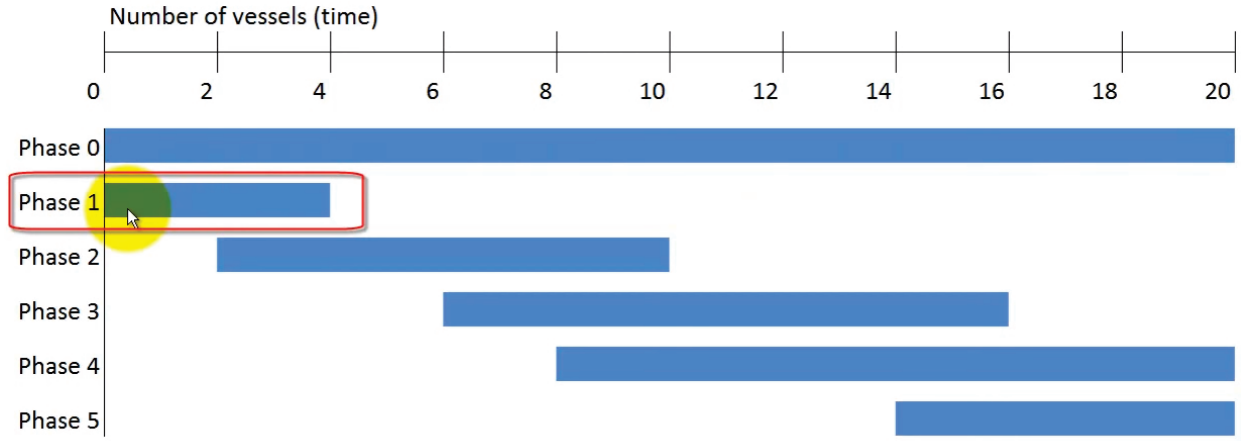
So, we imagine we have a timeline, representing the number of vessels, going from 0 to 20:



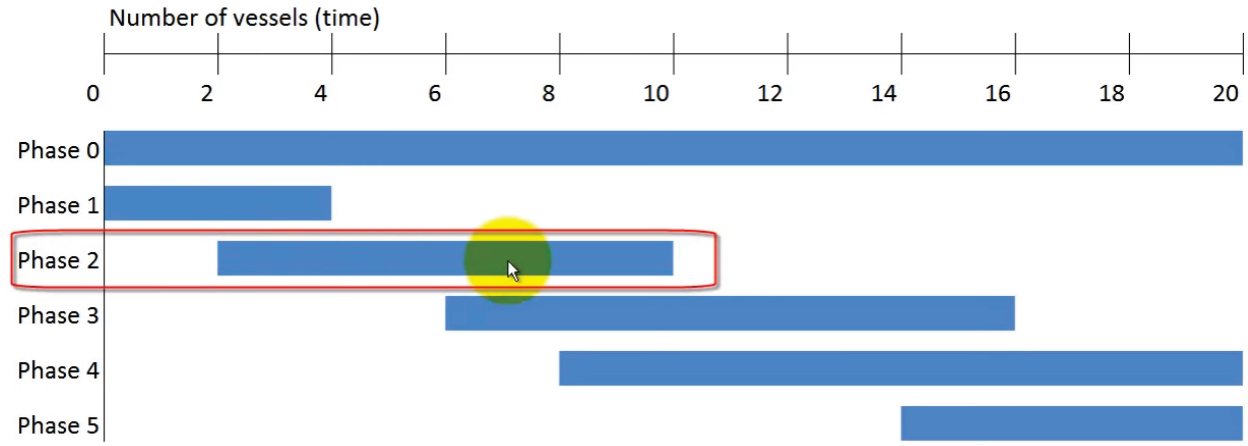
Then we can imagine we have an initial phase (Phase 0), which defines all weight items that will belong to all 20 vessels. So Phase 0 will stretch from 0 to 20:



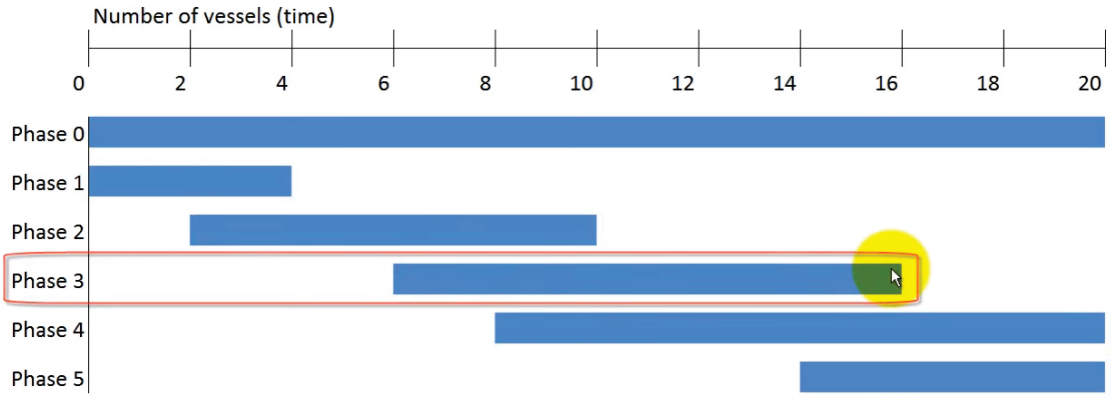
And then if there are modifications, or some special equipment that is valid for example only for the first vessels, then we define a new phase (Phase 1) for these vessels only:



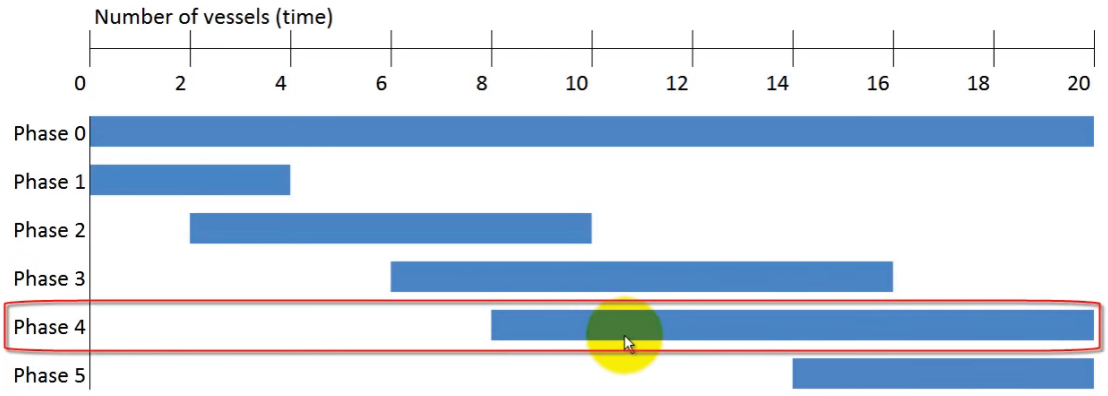
Another modification or change in design may happen at any time, so in this example we also have a Phase 2, going from vessel 2 to 10:



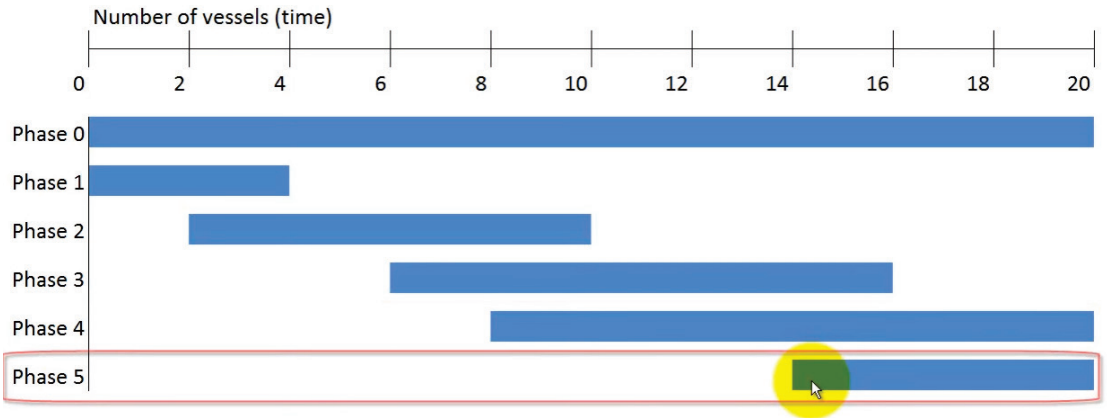
And another phase which indicates a modification or change, from vessel 6 to 16 (Phase 3):



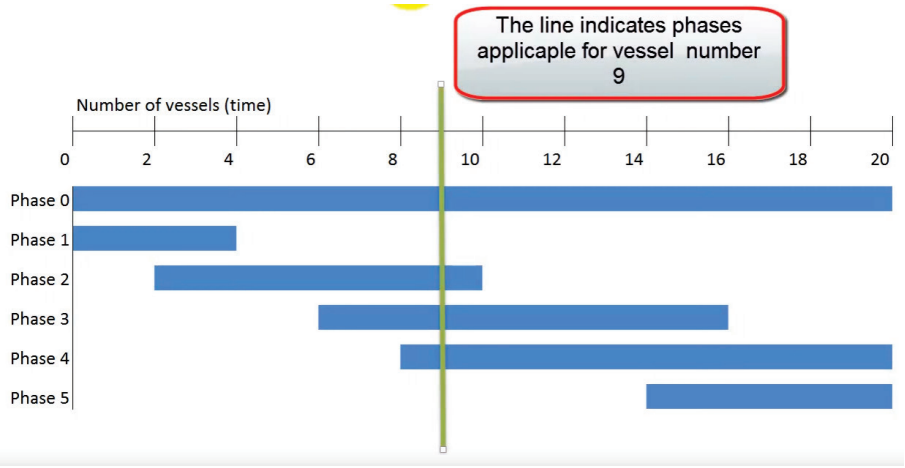
Phase 4 going from 4 to 20:



And finally, the last phase (Phase 5) goes from 14 to 20:

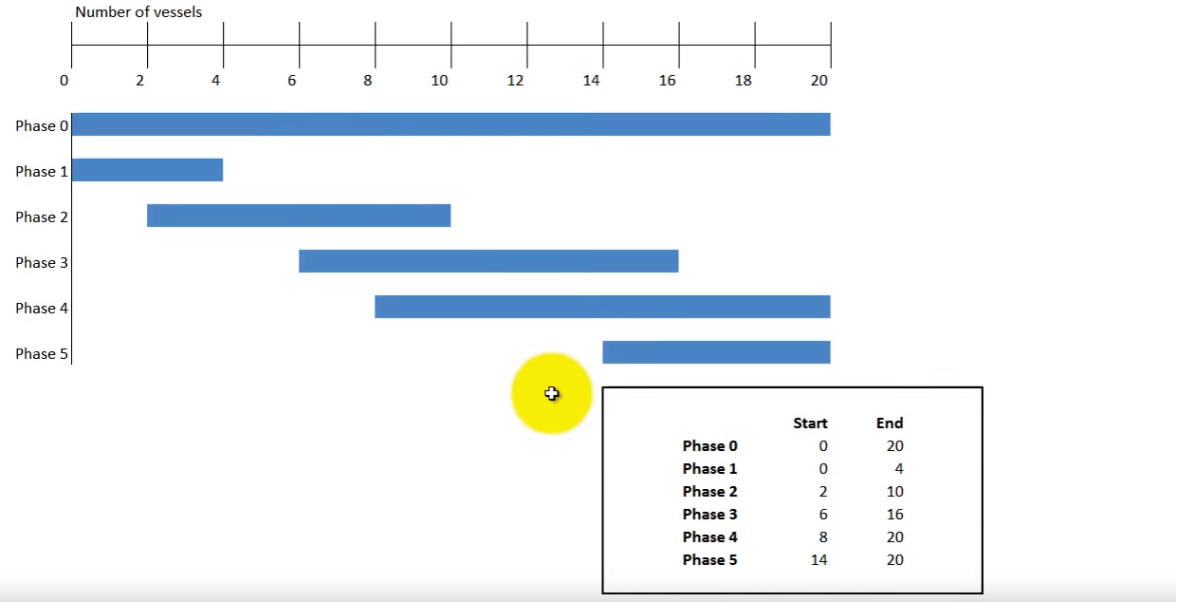


We combine all of this weight items in one project, and tag items to the phases and then if we need to know the weight of for example vessel number 9, we slice through the database at vessel number 9:



And only add up the items that are tagged to phases or modifications that are valid for that vessel or that time. In this case we can see that slicing through phases at vessel number 9, indicates that we need to include items tagged with Phase 0, Phase 2, Phase 3, 4 and leave out Phase 1 and 5 for this vessel.

Another way of representing this graph is to not use the bar, but just show the numbers for **Start** and **End** point.



	Start	End
Phase 0	0	20
Phase 1	0	4
Phase 2	2	10
Phase 3	6	16
Phase 4	8	20
Phase 5	14	20

Permission Settings

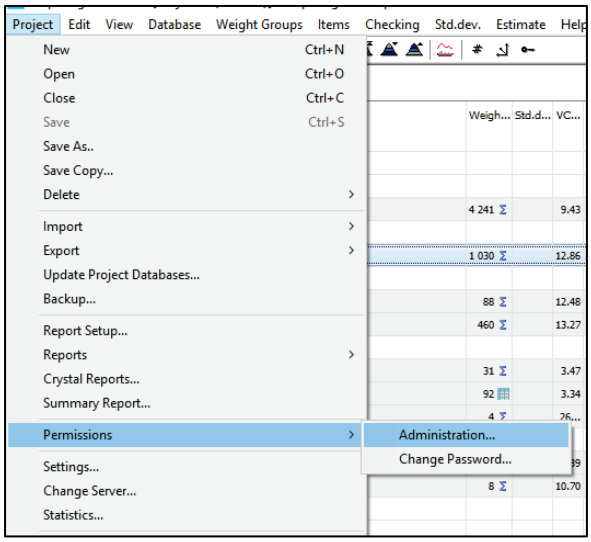
When you log in into ShipWeight with the Administrator account you have access to all functions in ShipWeight:

Within this administrator account in ShipWeight you can create other users and other user groups, where you can control the access these users will have to the various projects.

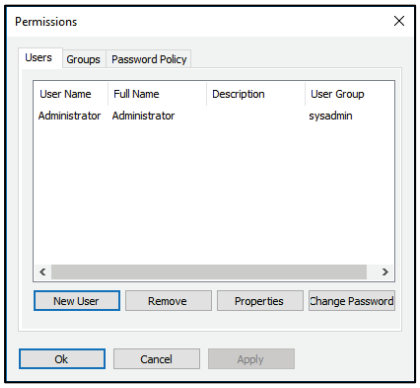
Step 1: Open the Permissions Window for ShipWeight Accounts

First, log on to ShipWeight with the ShipWeight Administrator User account.

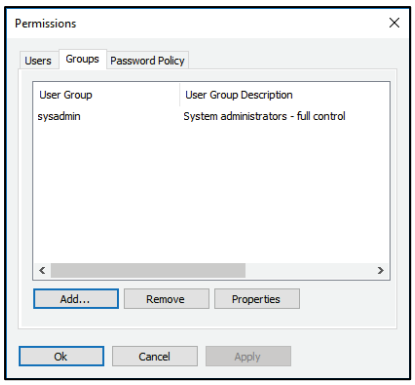
In the Project menu you will find a submenu called Permissions, then Administration and Change Password options.



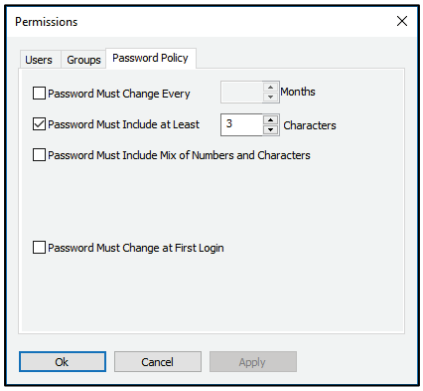
The Change Password option lets you change the password of the current user that you are logged in with, while the administration lets you create new users and user groups. So for now select the Administration option. The Permissions window will open:



By default, ShipWeight “Administrator” user always exists, also Sysadmin group always exists. And the Administrator is a member of the Sysadmin group.



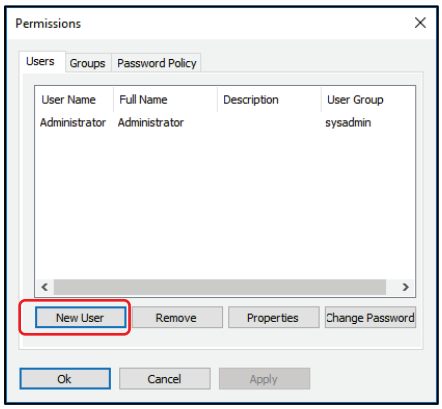
You can create as many users and users groups as you may want in ShipWeight, regardless the number of licences that you have. License only limits number of users simultaneous logged in, not the number of defined users (or number of client installations). In addition to create users and user groups, this Permissions window also has a tabsheet for Password Policy for the users:



This policy applies for all users.

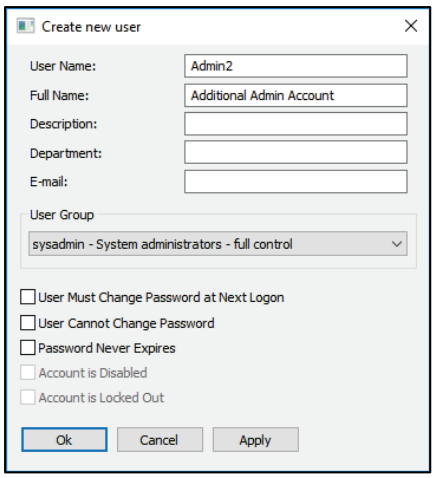
Step 2: Create a New User

To create a new user, go to the Users tabsheet and click New User button:

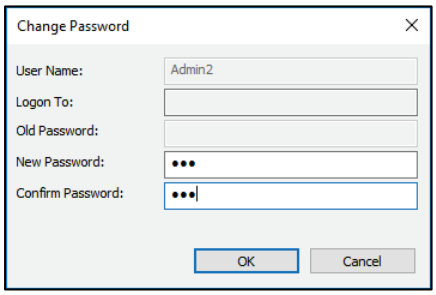


Create new user window will pop up:

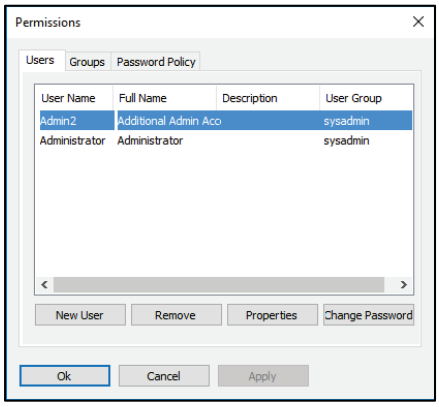
Here you can define the user name (is the name that logs on into ShipWeight). Also fill in the Full Name, then select the User Group:



Click OK, and then we have to define the password:



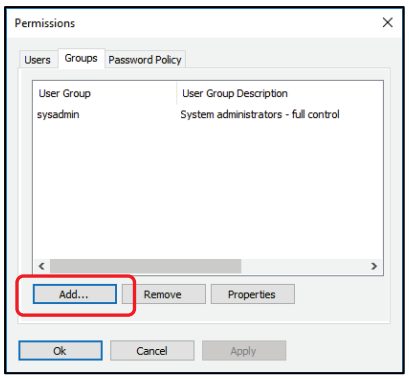
And click OK. So, now we have created a new user for the sysadmin group:



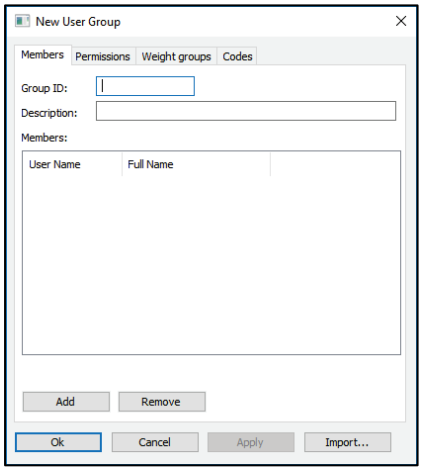
This new user will have access to all functions in ShipWeight, including creating other users and user groups. These ShipWeight users what can be accessed within the executable application of ShipWeight, but is does not overwrite any permissions given to the windows users on the sql server, so the sql server defines what the user can do on the sql servers, and these ShipWeight user defines what can be accessed and granted permission within the executable application.

Step 3: Define a New User Group

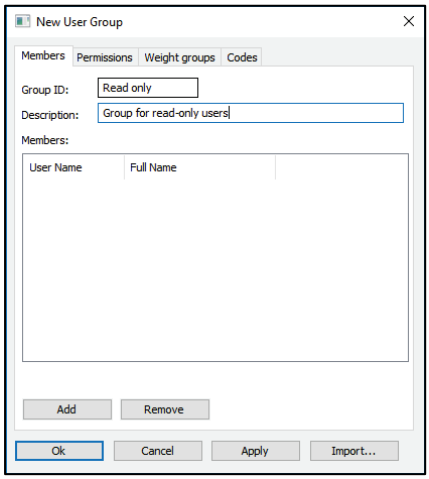
Now let's try to create another user group, a user group that should have only read only access. To do that, we click on the groups tab sheet and click the Add button:



And now we can define a new group:

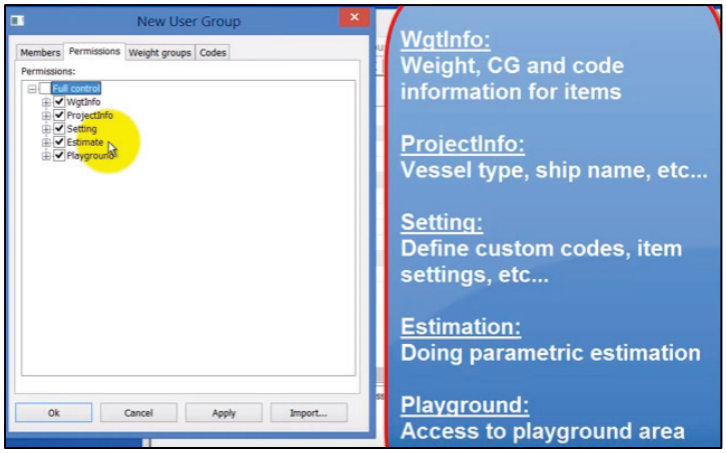


Give the Group ID and Description:

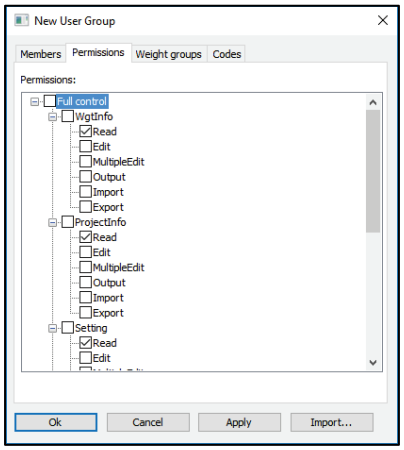


Step 4: Set Permissions for the New Usergroup

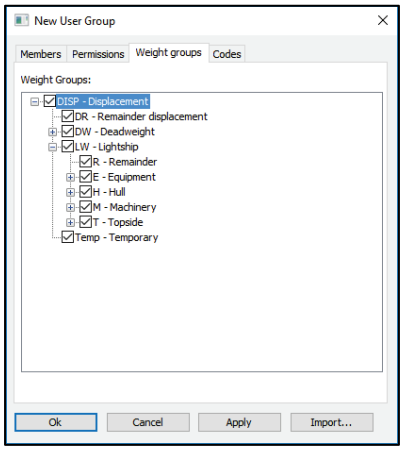
Click on the Permissions tab. If you check all the options, then you will have access to the following:



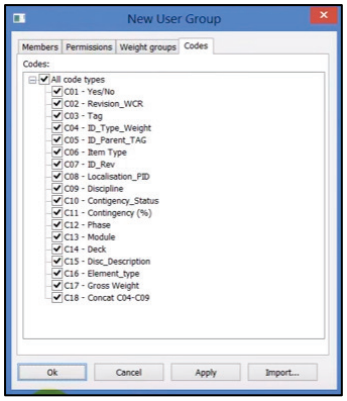
Since we are going to do a read only group and we would like this user to be able to access all area of the project with Read permissions, we will just select Read on the WgtInfo, ProjectInfo, Setting, Estimation and Playground:



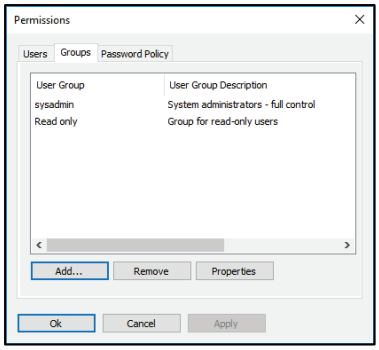
Next step is to define which Weight group this user is allowed to look into. In this case we will allow the user to access all groups:



The final tabsheet Codes, is to define if you want to remove access to certain custom codes for this group.

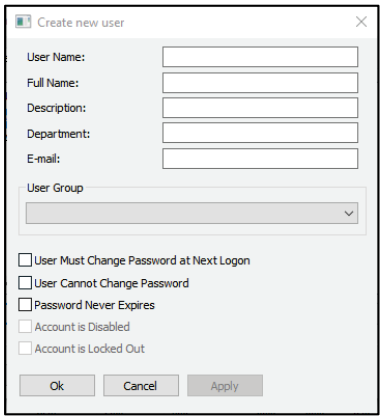


Now that the group has been defined, we can click OK and all these settings will be saved and we should be ready to add the user that we assign to this group.

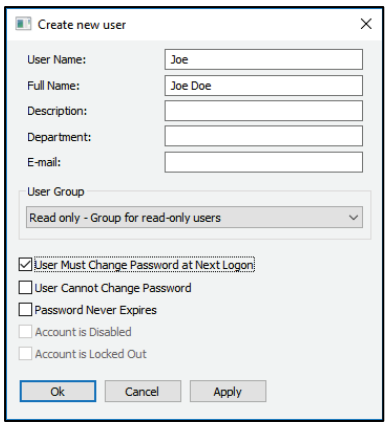


Step 5: Assign Users to the New Group

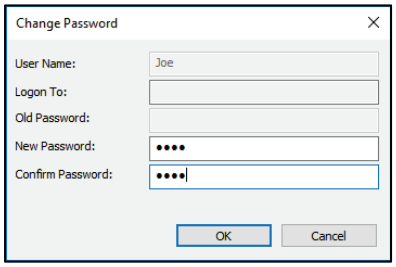
Users then will inherit the permissions belonging to the group, we go to User tabsheet and we create a new user, by clicking New User button:



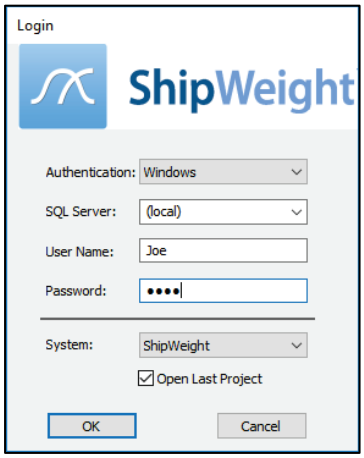
Fill in the following settings:



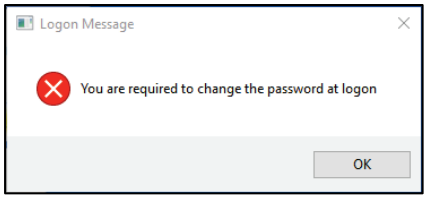
And then click OK. And then we set a temporary password:



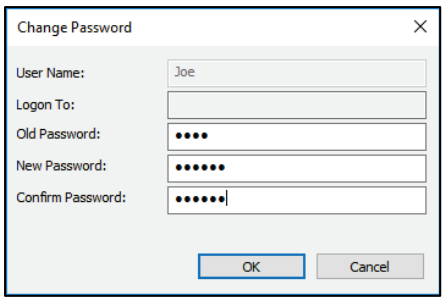
Click OK, and then again OK. Now we have defined this new user. For neow, this user will have only read only access to this project. And we can test it by Exit ShipWeight. And then we open ShipWeight, and now we will not log in with the Administrator, but with Joe user name and password:



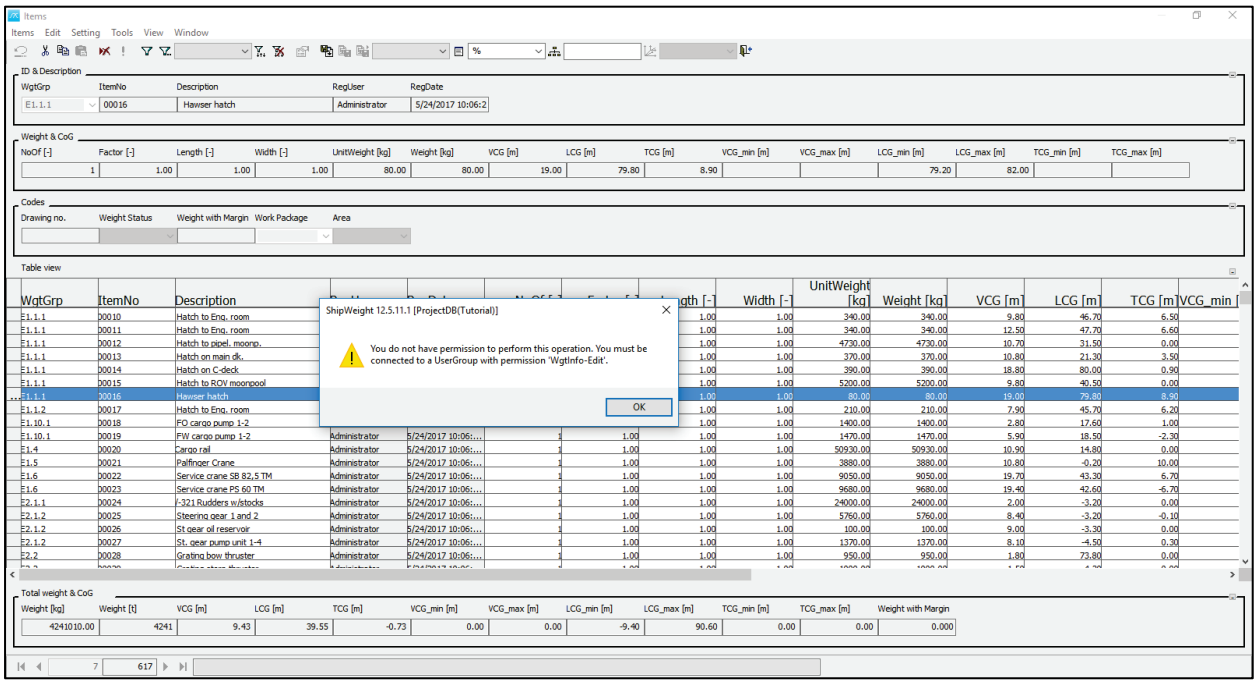
And we are required to change the password at logon:



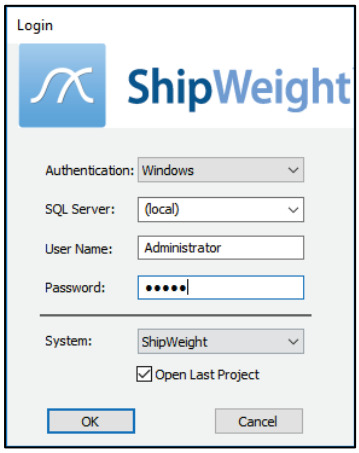
So create a new password:



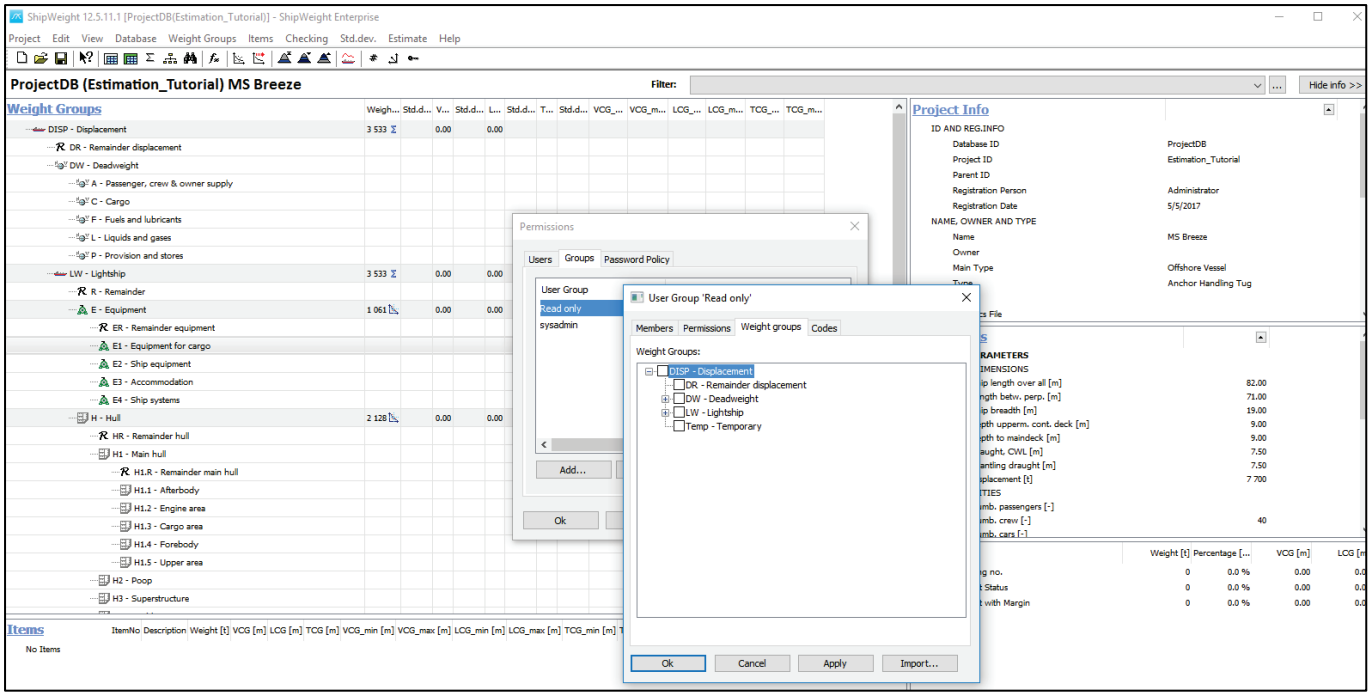
ShipWeight will open with the user permissions assigned. The user can read things, but he cannot change things. So the user can access the Items window, he can only read the information, he cannot change it:



The setting for this user group, is now valid only for this particular project, so if we exit this project, and go back in as the Administrator again:



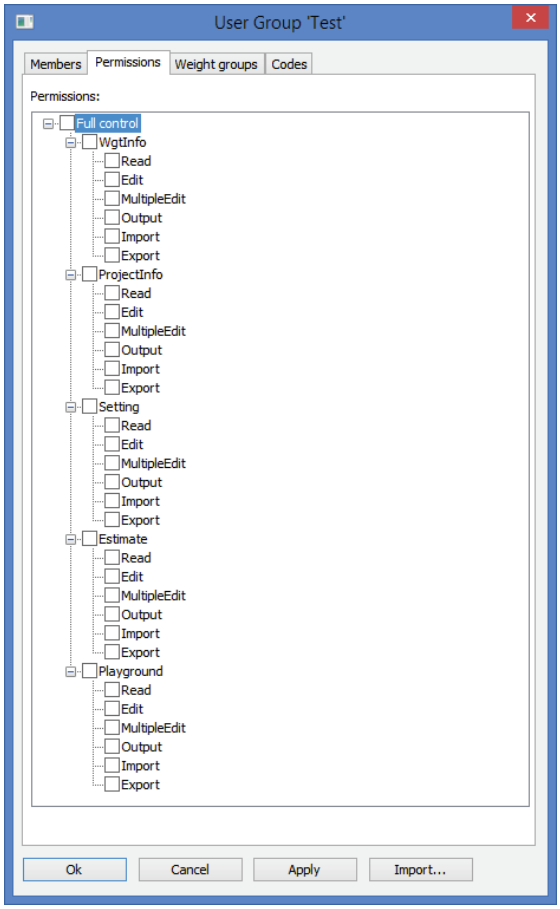
So if we open now a different project, the new group that we created will not have access to the newly opened project, but the group will exist in the Permissions window. But if we check the Properties we will see for this project there are no permissions granted:



Permissions are granted only for the specific projects where you applied the permissions settings.

More on Permission Settings

This is the main settings explained in more details:



Wgtinfo

WgtInfo is permissions related to all weight information, like weight items and weight groups

ProjectInfo

ProjectInfo is permissions related to project parameters that is not a direct weight parameter, in example vessel length, frame spacing, machinery power etc.

Setting

Setting is permissions that is related to Item Settings (Item Window view setup), Custom Codes, Number of decimals and similar settings for the project

Estimate

Estimate is permissions related to the parametric estimation window.

Playground

Playground is permissions related to the Playground Area in ShipWeight

Subcategories:

Each of the main category is divided into the following subcategories:

Read

When this is checked, the user/usergroup is granted access to read the information of the main category

Edit

When this is checked, the user/usergroup is granted access to edit the information of the main category, but only one item at the time.

MultipleEdit

When this is checked, the user/usergroup is granted access to edit the information of the main category, and several items at the time, in example deleting out all items within a weight group.

Output

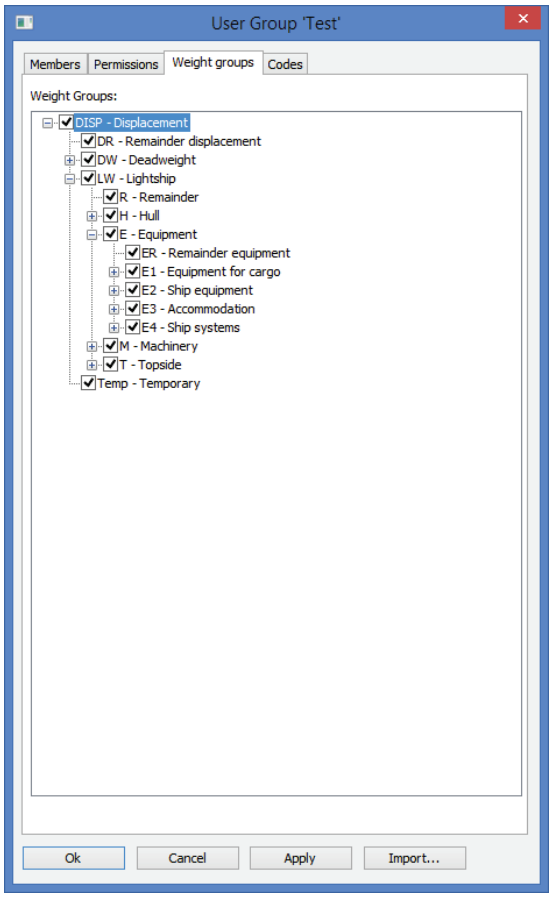
When this is checked, the user/usergroup is granted access to run reports of the information of the main category

Import

When this is checked, the user/usergroup is granted access to do file imports of the information of the main category

Export

When this is checked, the user/usergroup is granted access to do file export of the information of the main category



In addition to granting the permissions to the actions as explained above, the user/usergroup must also be granted access to the weight groups by checking off the part of ther WBS tree that is relevant for the user/usergroup (usually the whole tree).

This is done by clicking on the “Weight group” tabsheet next to the “Permission tabsheet.

See next pages for sample setups.

Examples

Administrator

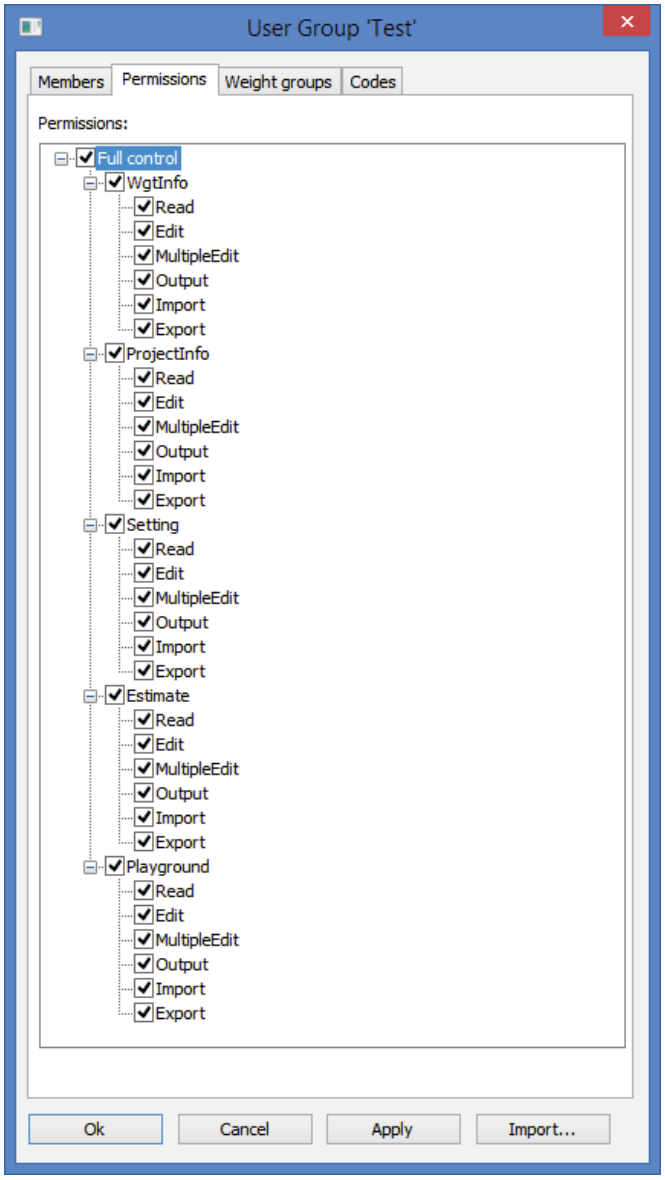
Should be assigned to the default “sysadmin” user group. No further settings needed

Key User

Should be assigned to the default “sysadmin” user group. No further settings needed in ShipWeight. On the SQL Server, the windows user of this person may be restricted from administrative SQL rights at the server level.

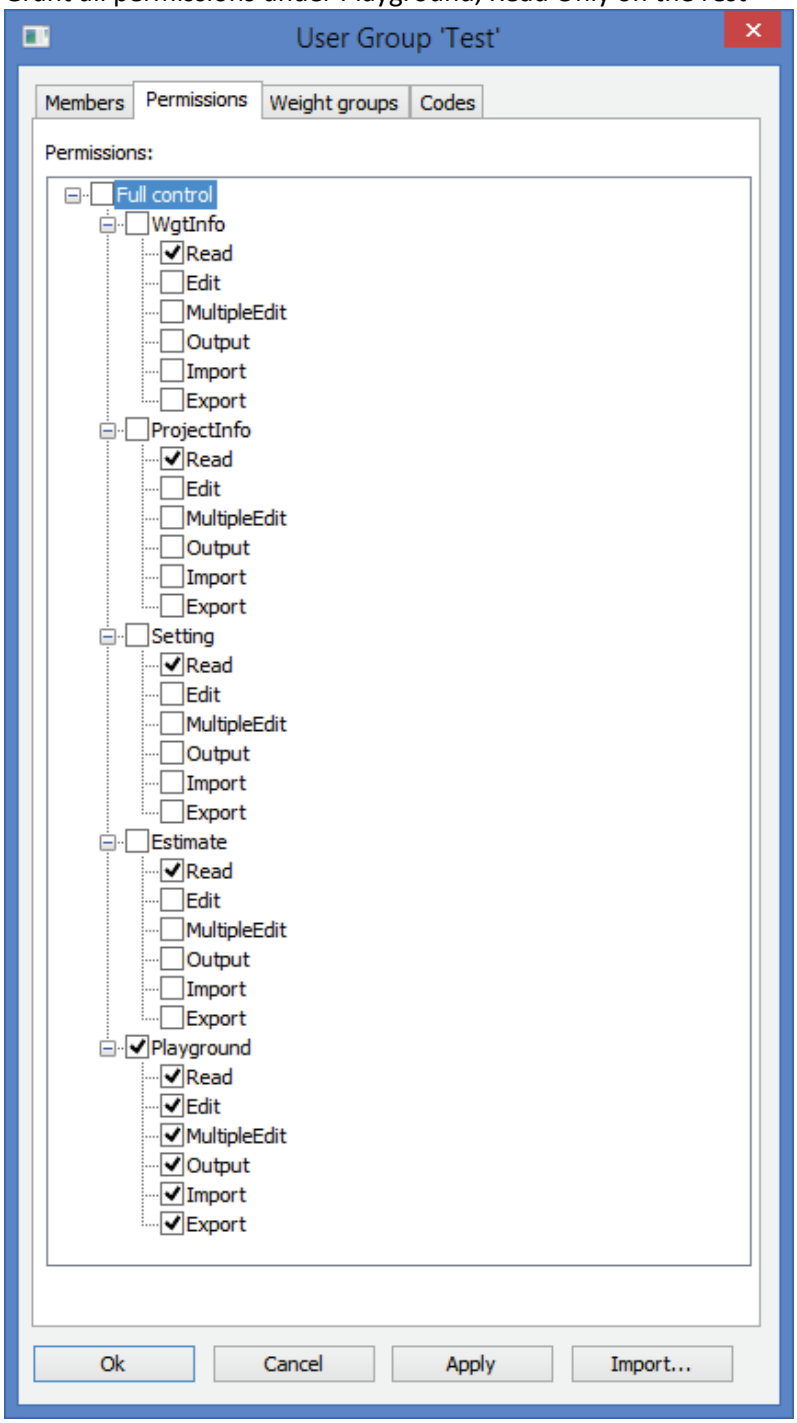
Weight Engineer

Grant all permissions – check all boxes



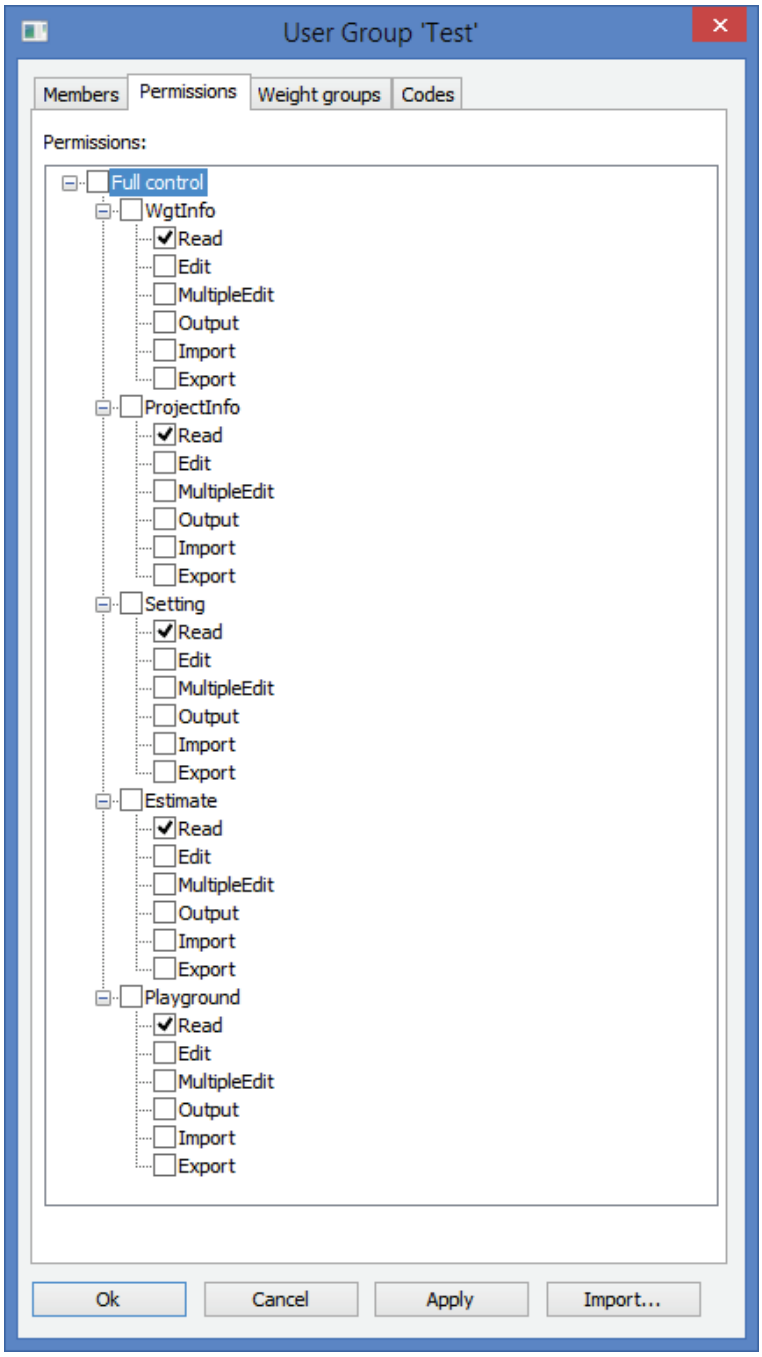
User **(playground only)**

Grant all permissions under Playground, Read Only on the rest



Guest **(just look, no touch)**

Grant Read Only on all categories



ShipWeight Plugins

The Naviswork Plugin

Crystal Reports

Introduction to Crystal Reports

There are two ways of reporting from ShipWeight: by using the standard reports and Crystal Reports.

The standard reports includes a Weight Item report, a Code report, a Weight Distribution report and a Weight tracking report to mention some. They are easily accessible from ShipWeight.

The standard reports are built into – or "hardcoded" into ShipWeight. This means that they are included in the Shipweight-executable file. Therefore, a ShipWeight user cannot do any changes to these reports. The layout and the information to be included are locked.

Naturally, many ShipWeight users need custom made reports. To meet this need, ShipWeight includes a powerful reporting engine based on Crystal Reports. Crystal Reports by Business Objects is the industry leading report-software created.

ShipWeight includes a Crystal Reports viewer. Basically, the ShipWeight Reports window does three things:

1. reads a predefined report formatting file
2. extracts data from the current database
3. displays the report on screen

Once your report is displayed on screen, you can send the report to a printer or export the report to various file formats. This includes formats such as Microsoft Word DOC and RTF and Adobe PDF.

ShipWeight only comes with the viewer part of Crystal Reports. To be able to create your own reports, you must purchase the full version of Crystal Reports.

The full version of Crystal Reports is a powerful, yet easy-to-use, tool for designing reports. Using Crystal Reports, you set up a report template specifying:

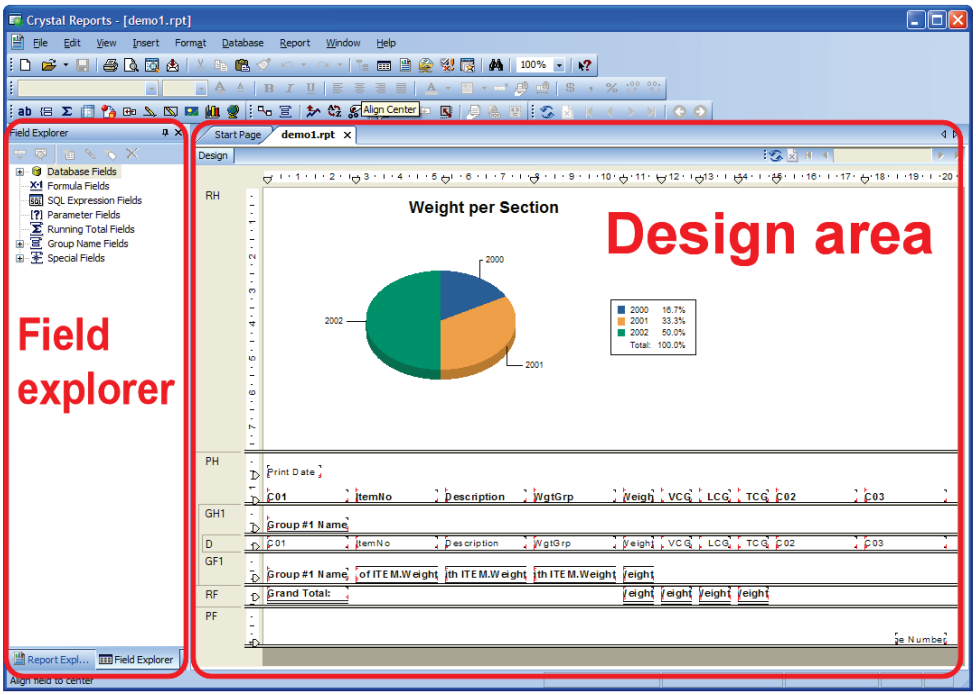
1. what data the report should contain
2. the order the data should appear
3. the format of the report

You can easily insert graphics, such as your company logo, into the report. Also a variety of charts are available for use in your report.

When you created a report template, you save it as a .RPT file. Make sure to set up Crystal Reports so that data are not saved with the report. This means that the .RPT file will not contain any data – only the formatting of the report.

Now you can easily share your .RPT file with any ShipWeight user in your organization. Any user authorized to access the ShipWeight Report Viewer can run, view and print the report.

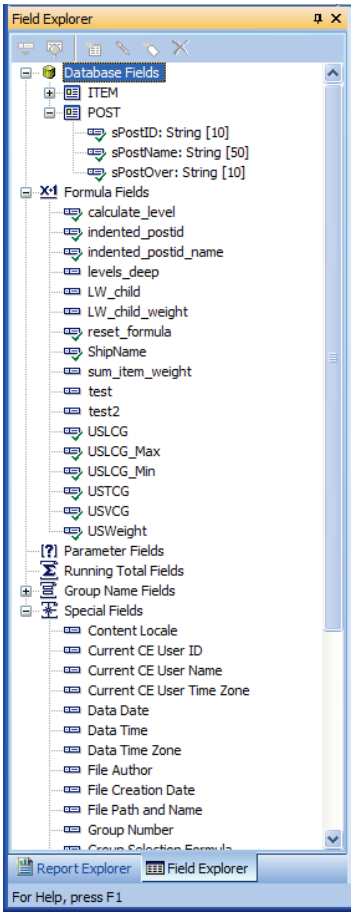
The Crystal Reports main window includes two main parts: The 'Field Explorer' and the Design Area.



The Field Explorer includes all data that is available for use in the current report. This includes:

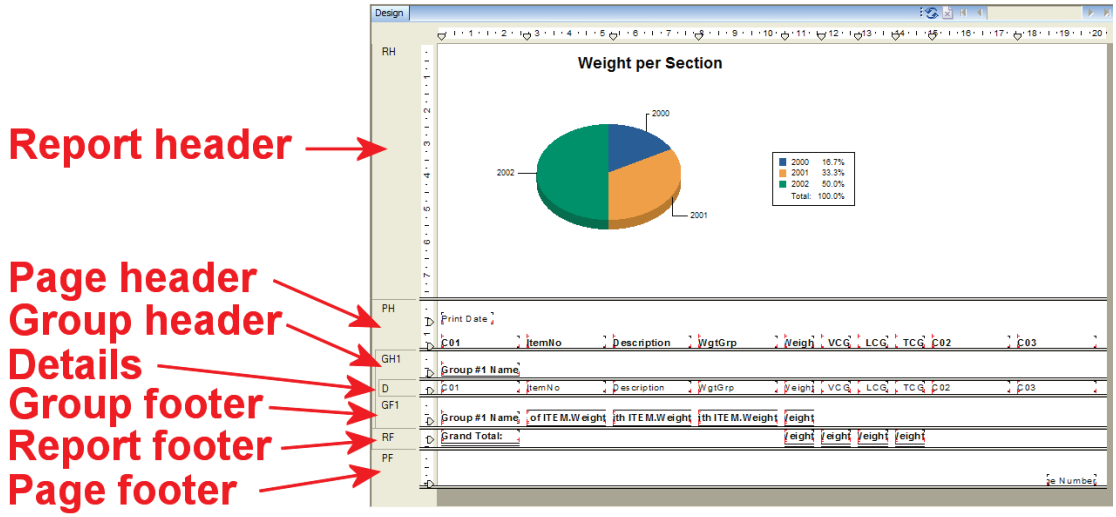
- Database Fields
- Formula Fields (calculated data)
- Parameter Fields (user input)
- Running Total Fields
- Group Name Fields
- Special Fields (page number, date etc.)

The easiest way of adding data to the report, is to simply drag it from the ‘Field Explorer’ into the Report.



The design area at the right side is divided into several sections:

- Report Header — First part of the report – For report title, chart, etc.
- Page Header — Repeated on top of every page – For logo, date, etc.
- Group Header — Repeated at the beginning of a group – For group title
- Details — The main data of the report
- Group Footer — Repeated at the end of a group – For group summary
- Report Footer — Last part of the report – For report summary
- Page Footer — Repeated at the bottom of every page

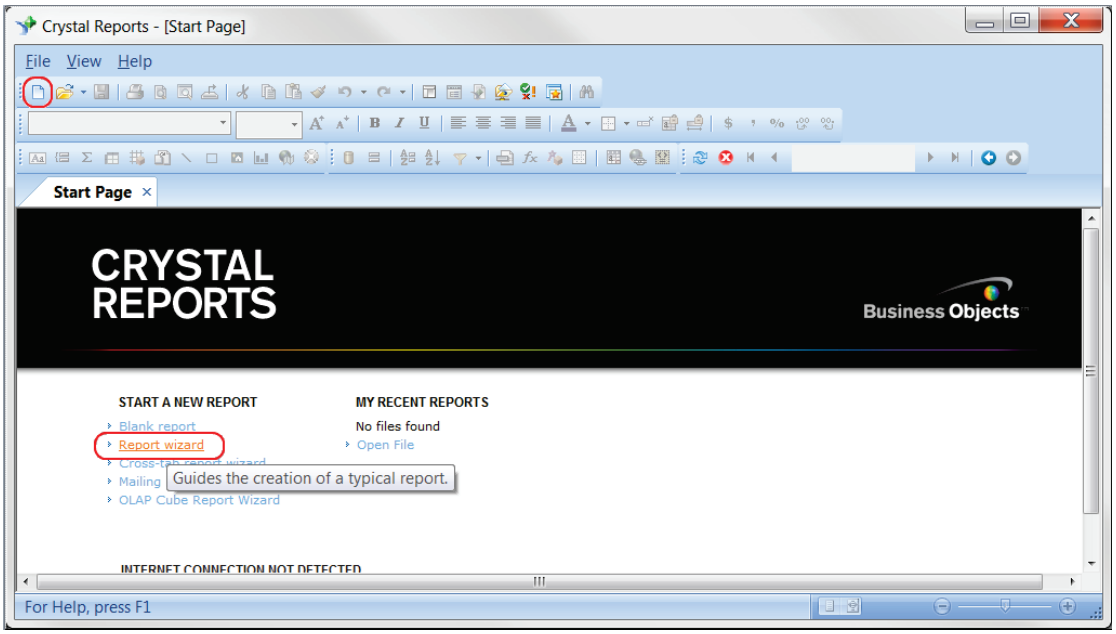


ShipWeight is delivered with a set of sample reports to be used with the Report Viewer. In many cases, the easiest way of creating your own report will be to modify one of the sample reports. This is especially useful if you just want to do minor changes such as inserting your company logo or change the formatting of a report.

In this session, we will create a new report from scratch using the 'Report Creation Wizard'.

Step 1: Start a New Report Using the Wizard in Crystal Reports

To start the wizard, you need to click the **New Report** button on the toolbar:

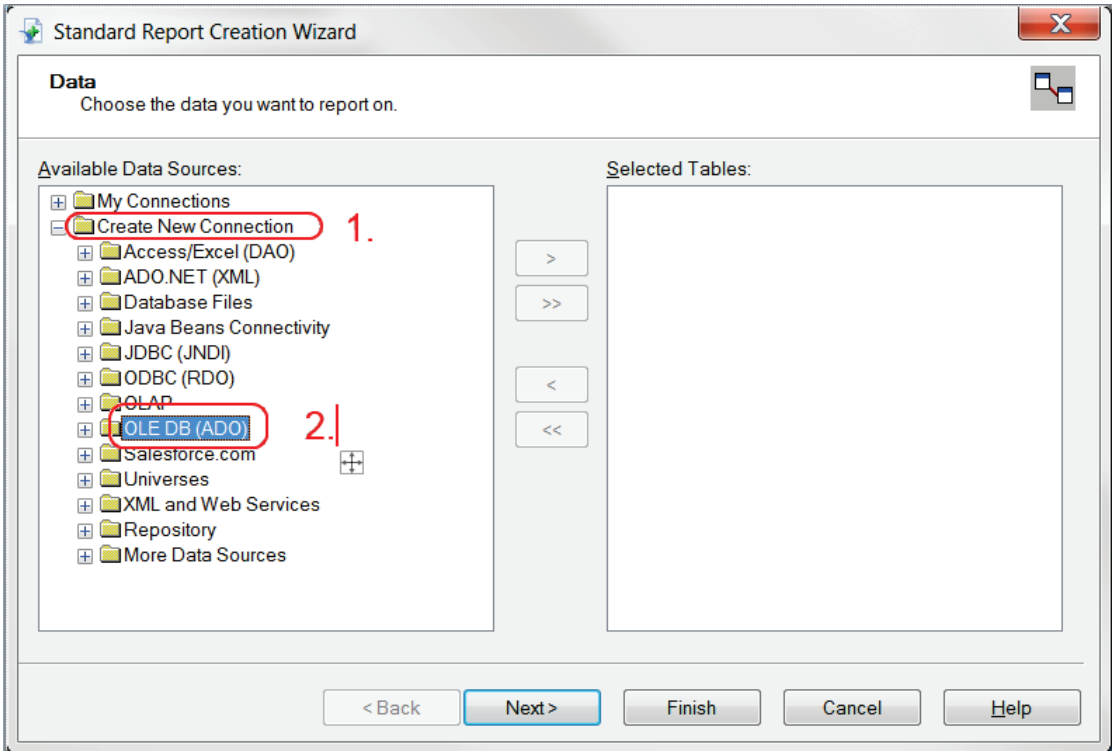


Now, the '**Report Creation Wizard**' will appear. This wizard will guide you through the process of creating a report.

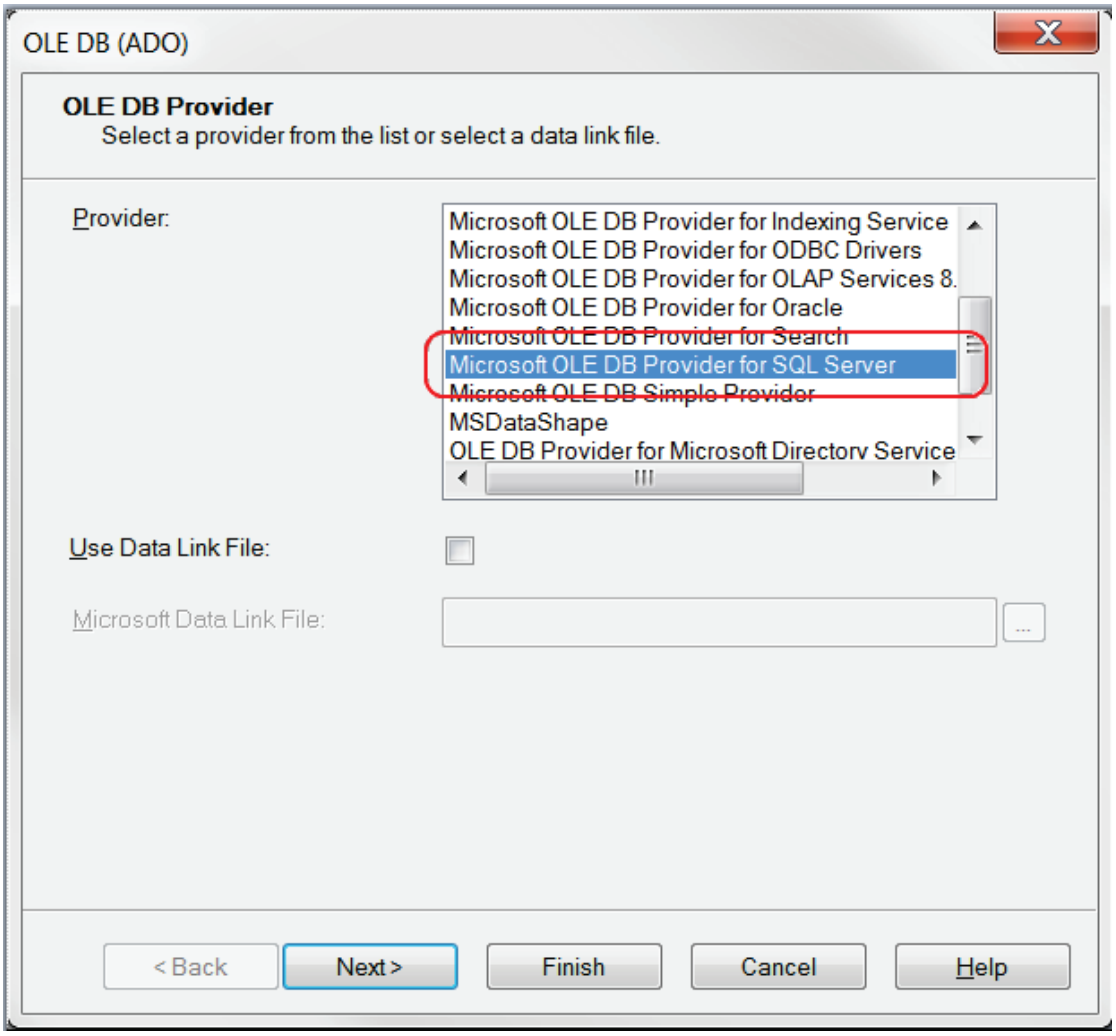
The first step is to choose the data you want to report on. Basically, this means choosing the database and tables to use in the report.

The Data window of the wizard contains a list of '**Available Data Sources**' on the left side, and '**Selected Tables**' on the right side.

In the list of '**Available Data Sources**', you first expand the branch named '**Create New Connection**'. This is done either by clicking the small plus sign or by double-clicking it with the mouse.



Next, you should expand the 'OLE DB (ADO)' branch. A new window-window titled OLE DB (ADO) will appear. This window is used to set up the connection to the database.



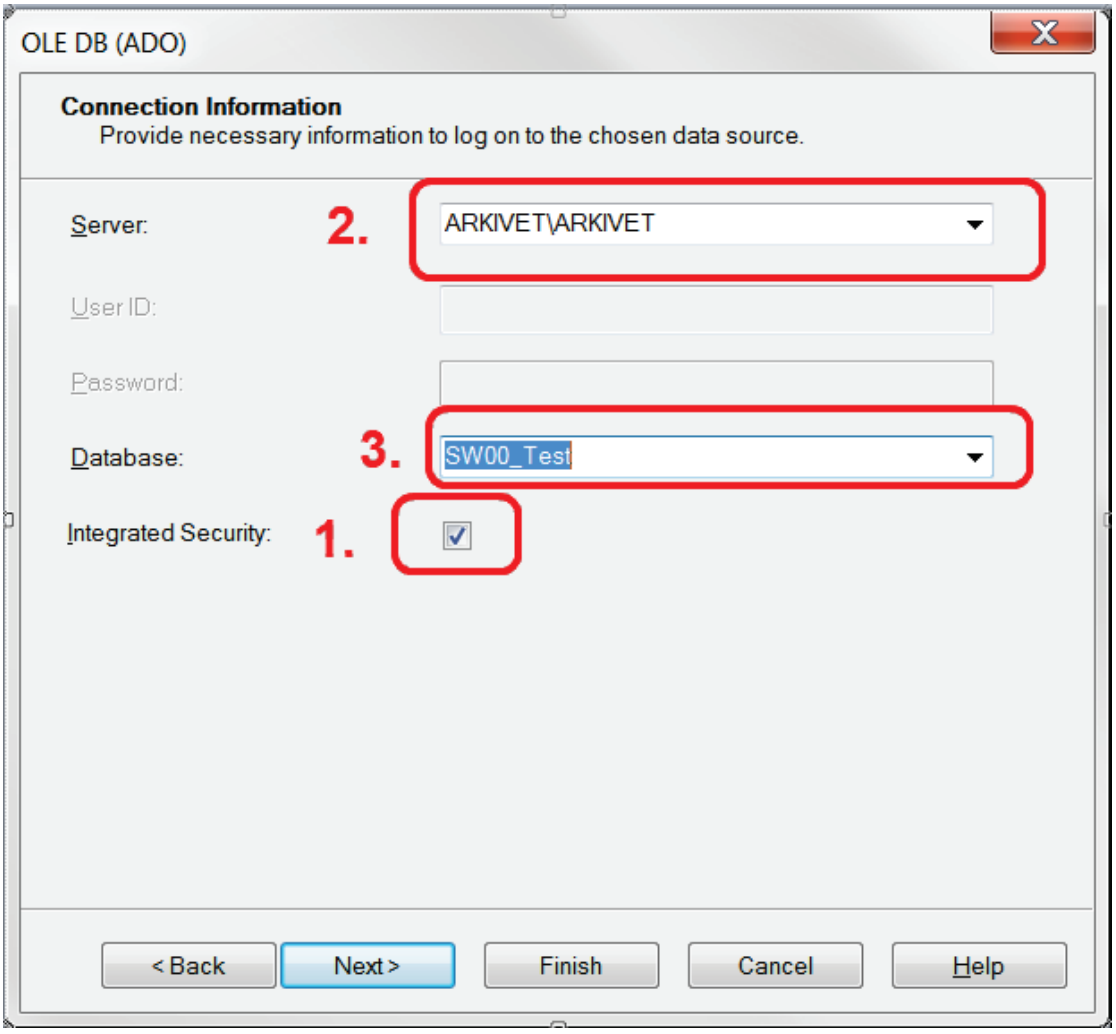
In the '**Provider**'- list, you should select 'Microsoft OLE DB Provider for SQL Server'. Click the **Next** button to continue.

Now you will be asked to provide the necessary information to log on to the data source.

The first thing you need to do is to check the '**Integrated Security**' button. When 'Integrated security' is selected, Crystal Reports will connect to the SQL database using your Window username and password. Now you will not need to enter the '**User ID**' and '**Password**'.

Next, you should enter the name of the SQL server in the '**Server**' field. Make sure to ask your database administrator for the name of the server containing the ShipWeight databases.

Now, select one of the available databases from the '**Database**' dropdown list. Databases starting with SW0 are project databases.

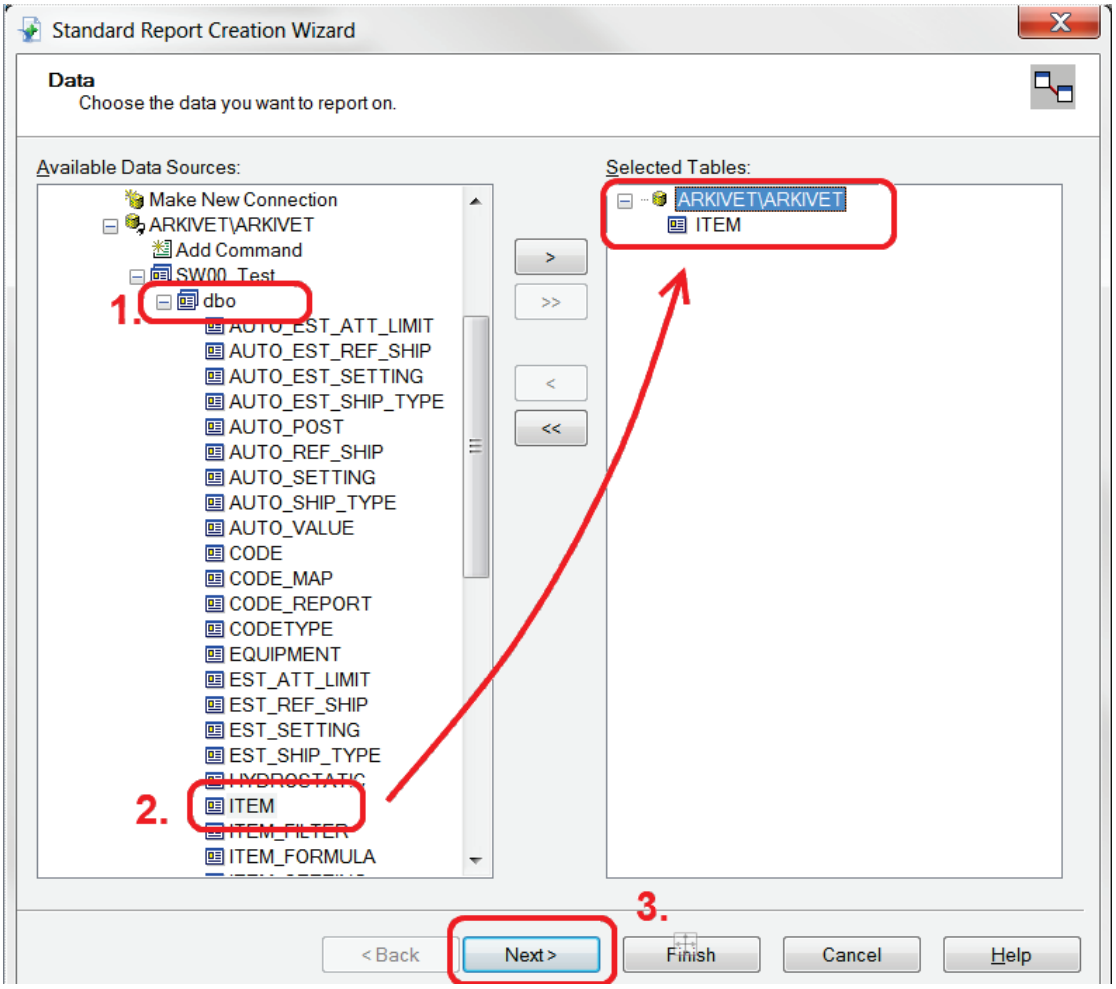


Click the **Finish** button to close the '**OLE DB**' window.

Back in the wizard, you will now find the database in the '**Data Sources**' tree.

Double-click on the database name to expand the branch. Next, expand the '**dbo**' branch. A list of the available tables will appear.

Now you need to drag-and-drop the '**ITEM'-table**' to the '**Selected Tables**' list at the right side.



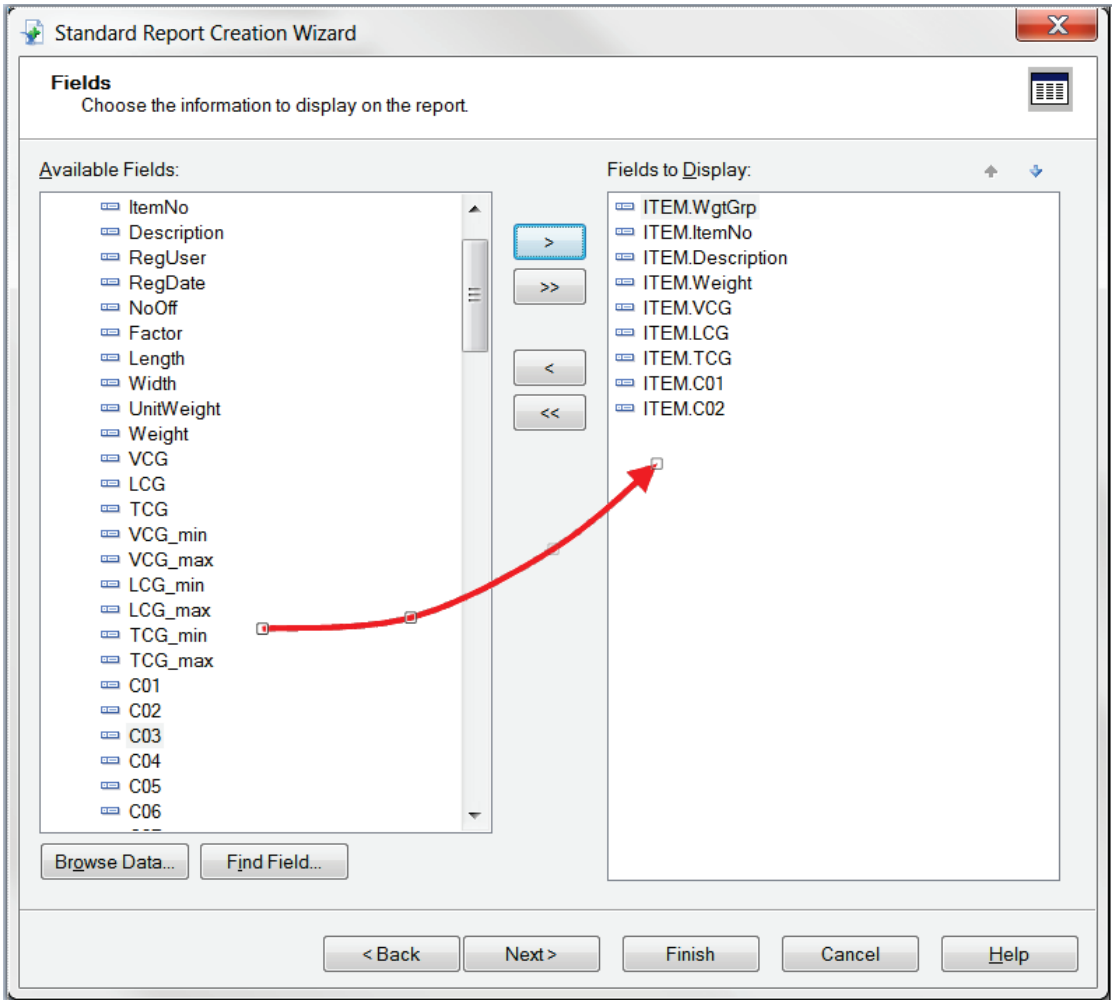
Click the **Next** button.

The next step of the wizard is to choose the fields to display in the report.

The wizard now shows two lists: '**Available Fields**' and '**Fields to Display**'. The **Available Fields** list shows all the fields in the **ITEM** table.

To include fields in the report, simply drag-and-drop them to the '**Fields to Display**' list.

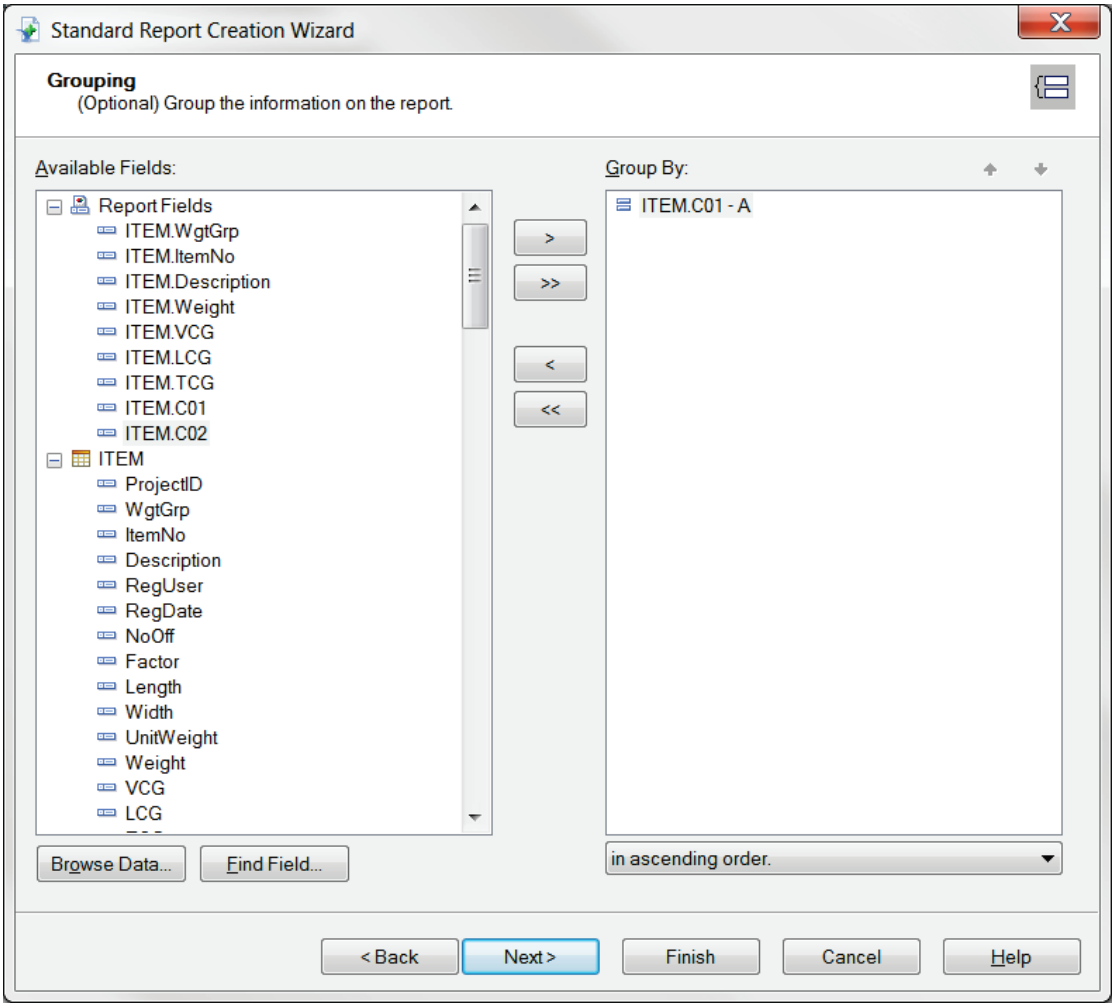
You can re-arrange the order of the selected fields by simply dragging them to a new location in the '**Fields to Display**'-list.



When you have selected the data you want in the report, click the **Next** button to continue to Grouping.

If you want to group the data in the report, simply drag-and-drop this field from the '**Available**'-list to the '**Group By**' list.

In this example we will group on code C01, which is a Section code.

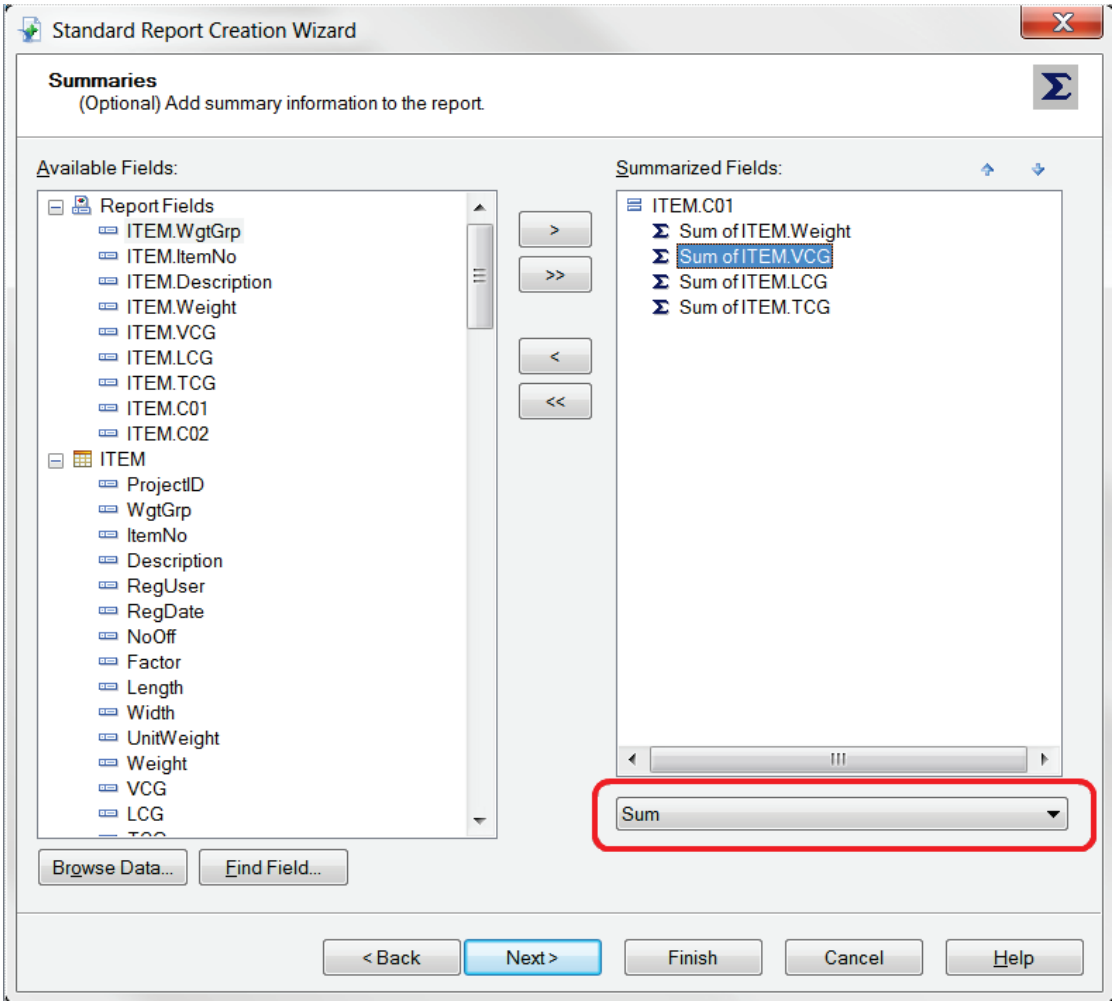


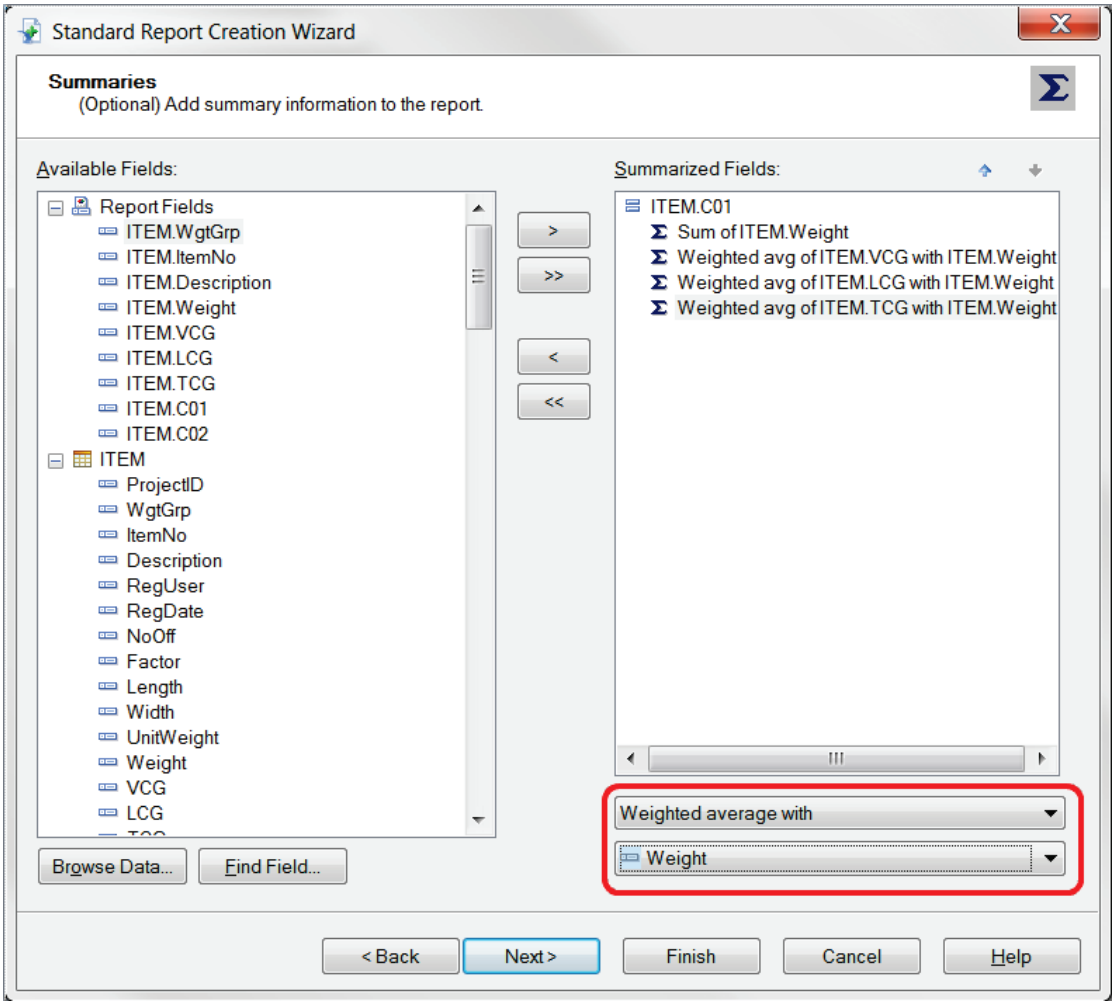
Click **Next** to go to the Summaries-part of the Wizard.

To add summary information to the report, simply drag-and-drop the field to the ‘Summarized Fields’-list.

All numerical fields in the report are automatically added to the ‘Summarized Fields’-list.

Please note that the default type of summary is Sum. Make sure to change summary type for VCG, LCG and TCG from ‘Sum’ to ‘Weighted average with Weight’.

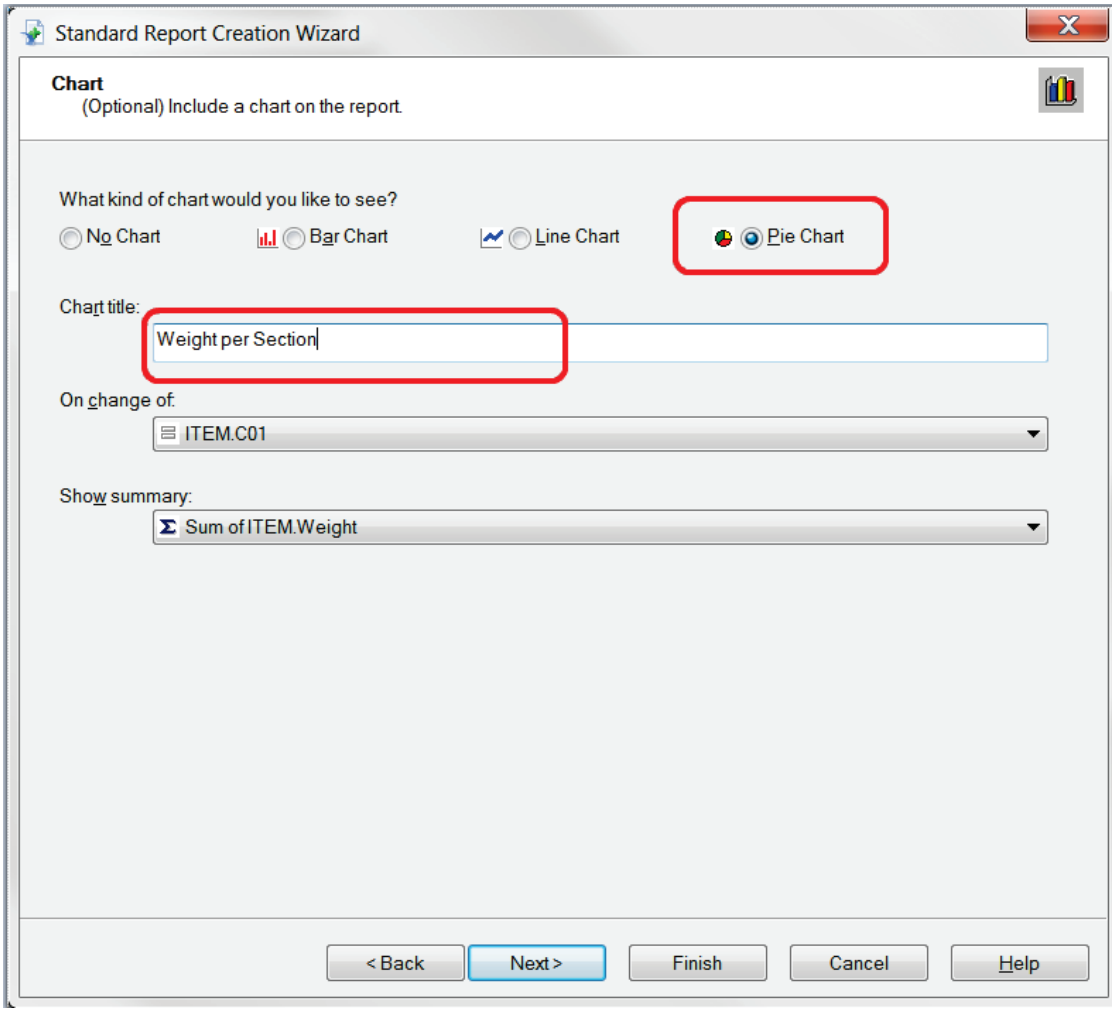

Standard Report Creation Wizard
Summaries
(Optional) Add summary information to the report.
Available Fields:
Report Fields
ITEM.WgtGrp
ITEM.ItemNo
ITEM.Description
ITEM.Weight
ITEM.VCG
ITEM.LCG
ITEM.TCG
ITEM.C01
ITEM.C02
ITEM
ProjectID
WgtGrp
ItemNo
Description
RegUser
RegDate
NoOff
Factor
Length
Width
UnitWeight
Weight
VCG
LCG
>
>>
<
<<
Summarized Fields:
ITEM.C01
Sum of ITEM.Weight
Sum of ITEM.VCG
Sum of ITEM.LCG
Sum of ITEM.TCG
Sum
Browse Data...
Find Field...
< Back
Next >
Finish
Cancel
Help



When you click the **Next** button, you come to the **Group Sorting**. We will not use group sorting in this example, so you should click the **Next** button once more to go to the **Chart-section** of the Wizard.

We will include a Pie Chart showing the Weight of each section. Select **Pie Chart**. Optionally you can change the **Chart title**.

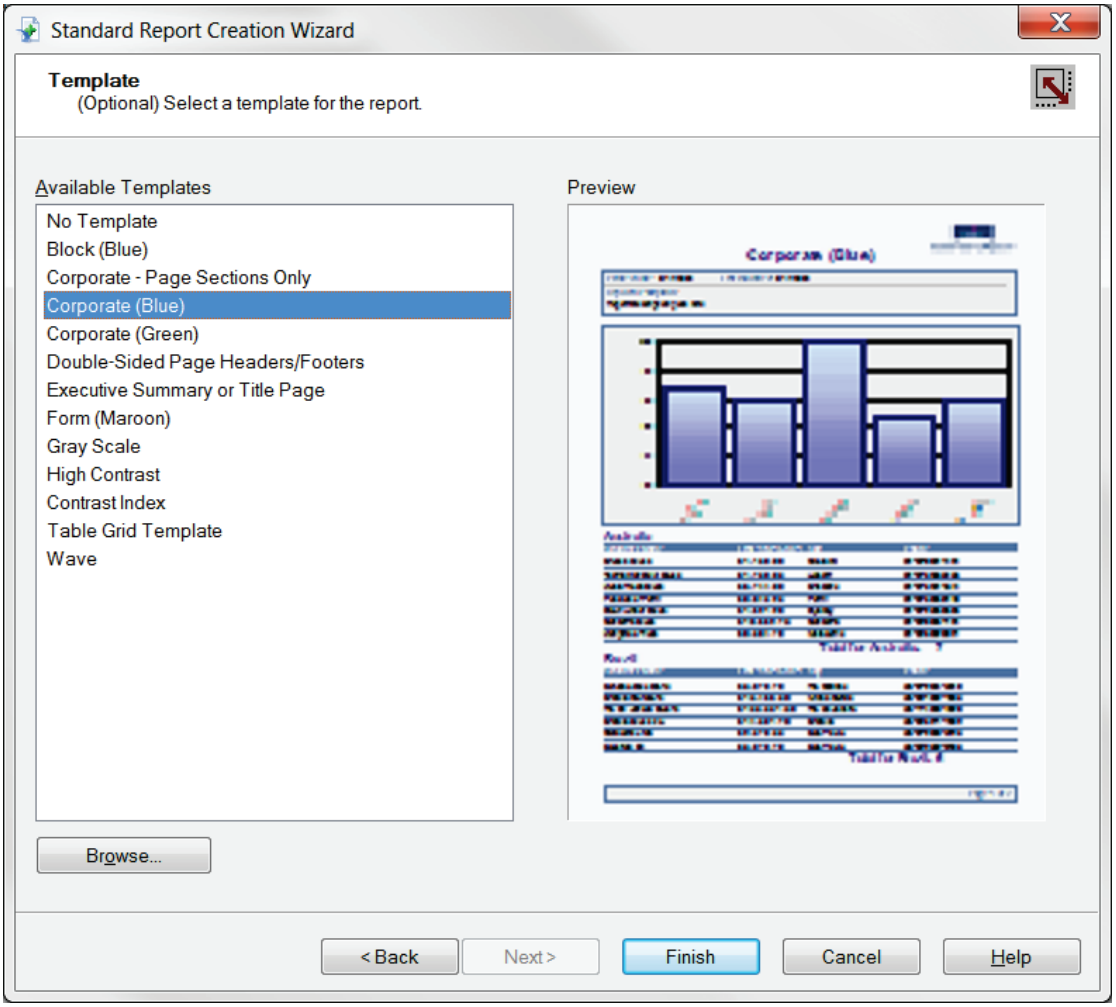
Make sure the **On change of** field is set to **ITEM.C01**, which is our Section code in this example. Also check that **Show summary** is set to **Sum of ITEM.Weight**.



Click **Next** to go to **Record Selection**. You can use record selection to include only a part of the data from the database in the report.

We will not be using record selection in this example. Click **Next** to continue to the last item in the wizard: **Template**.

Crystal Reports comes with a set of predefined templates. You can use one of these to quickly change the look of your report.

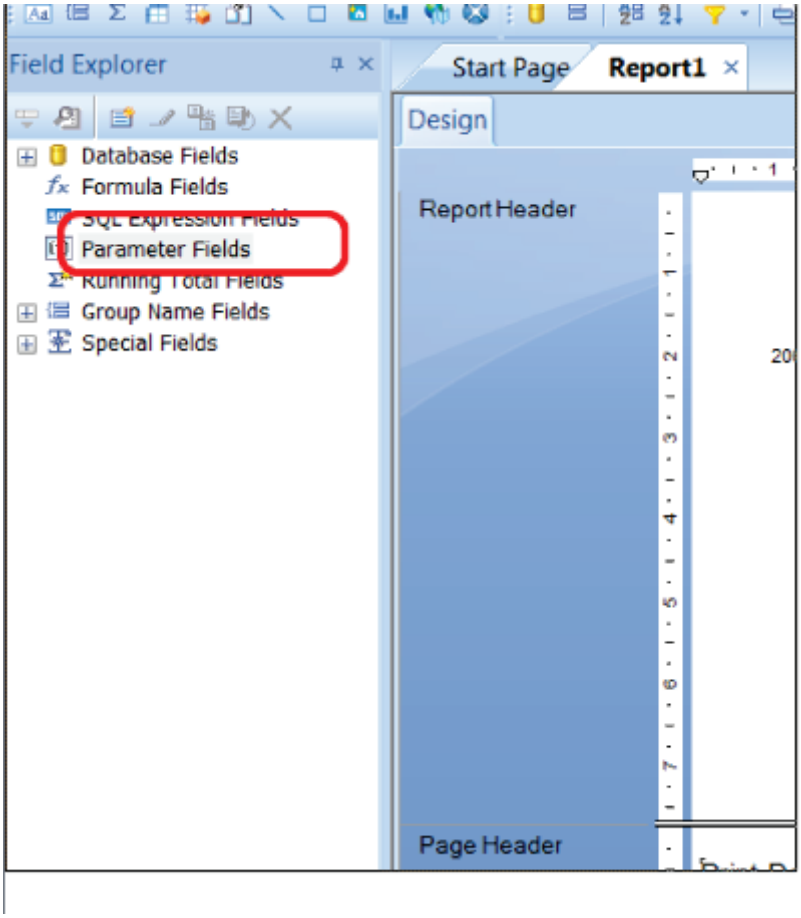


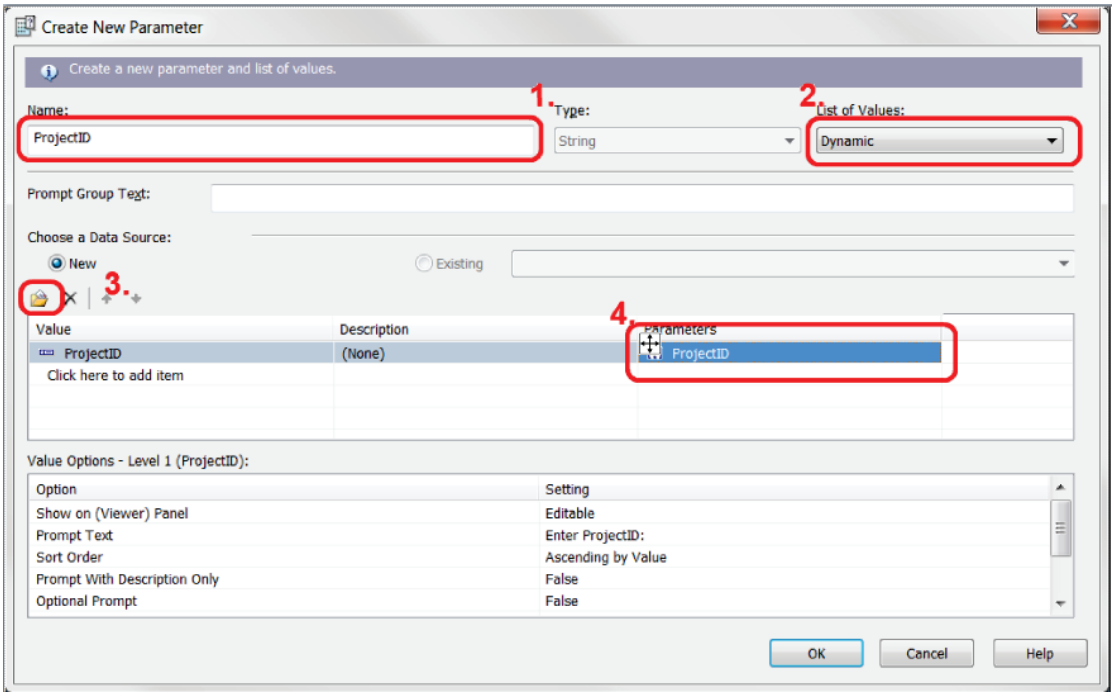
Click the **Finish** button to exit the Report Creation Wizard.

Step 2: Create a Project ID Filter

Each project database can contain several projects. The report will now include data from all projects on the database. To list data from the current project only, it is necessary to insert a filter.

First, we will insert a parameter field to prompt for the current project name. Click **Parameter Fields** in the **Field Explorer** with the **right mouse** button. If the **Field Explorer** is not present, get it from the **View** menu. From the right-click menu, select **New…**





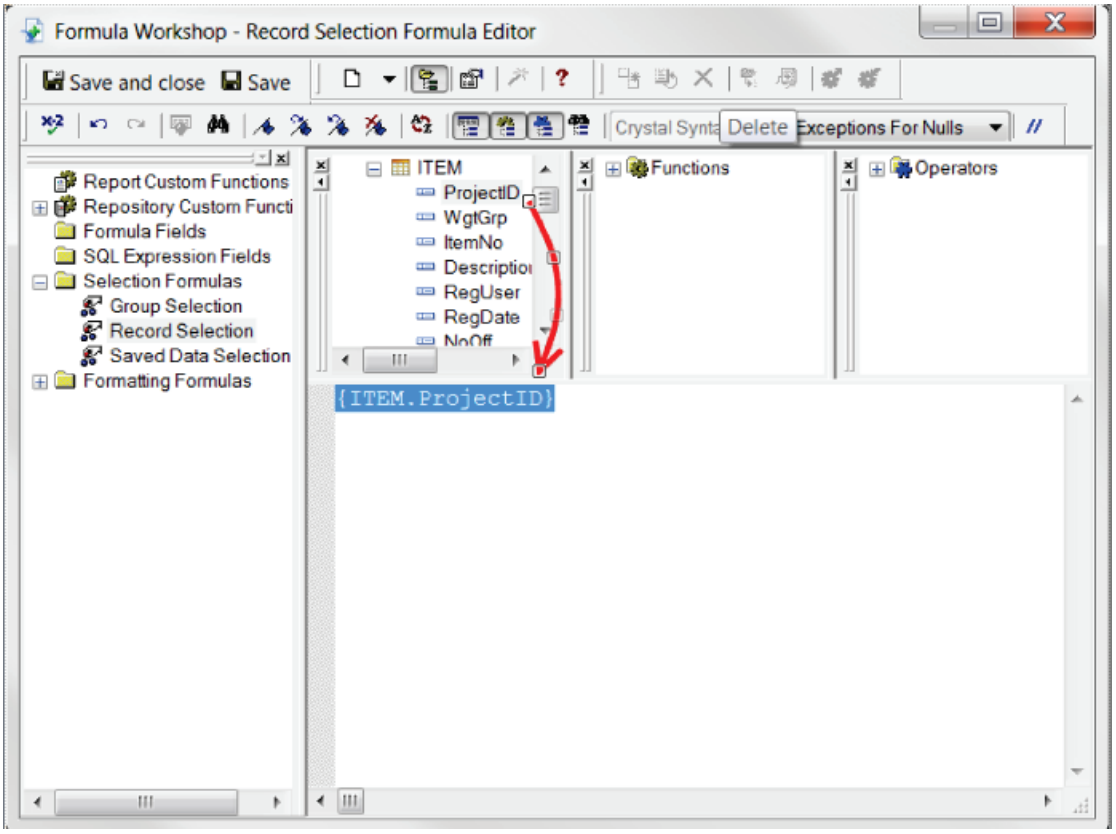
In the **Create New Parameter** window, enter **ProjectID** (1.) as the name of the parameter.

To add a dynamic list of values to the ProjectID parameter, select **Dynamic** (2.). You then click the **Insert** button (3.), and select **ProjectID** from the dropdown list. In the **Parameters** column, click on the text **Click to create parameter** (4.). The text will change to ProjectID.

Click the **OK** button to close the **Create New Parameter** window.

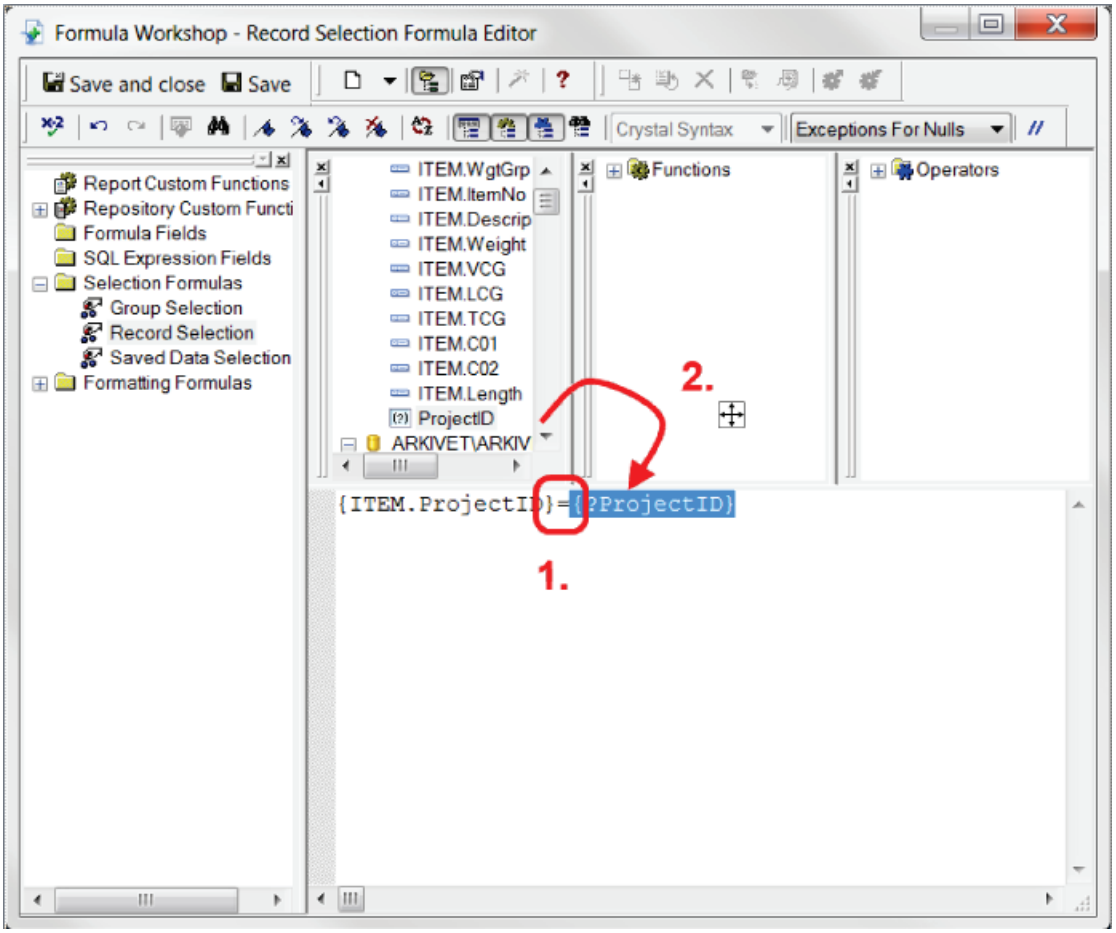
Now we are ready to create the data filter. This is done by creating a Record Selection formula. **Choose Selection Formulas** and then **Record…** on the **Report** menu.

In the Report Fields list of the Formula editor, expand the database and the item table. Select the database field ProjectID with the mouse, and drag it into the formula text window.



In the formula text window, type the sign of equality (1.) after the text {ITEM.ProjectID}.

Select the parameter named ProjectID (marked with a question mark icon in the list) in the 'Report Fields' branch. Drag and drop it to the formula text window (2.).

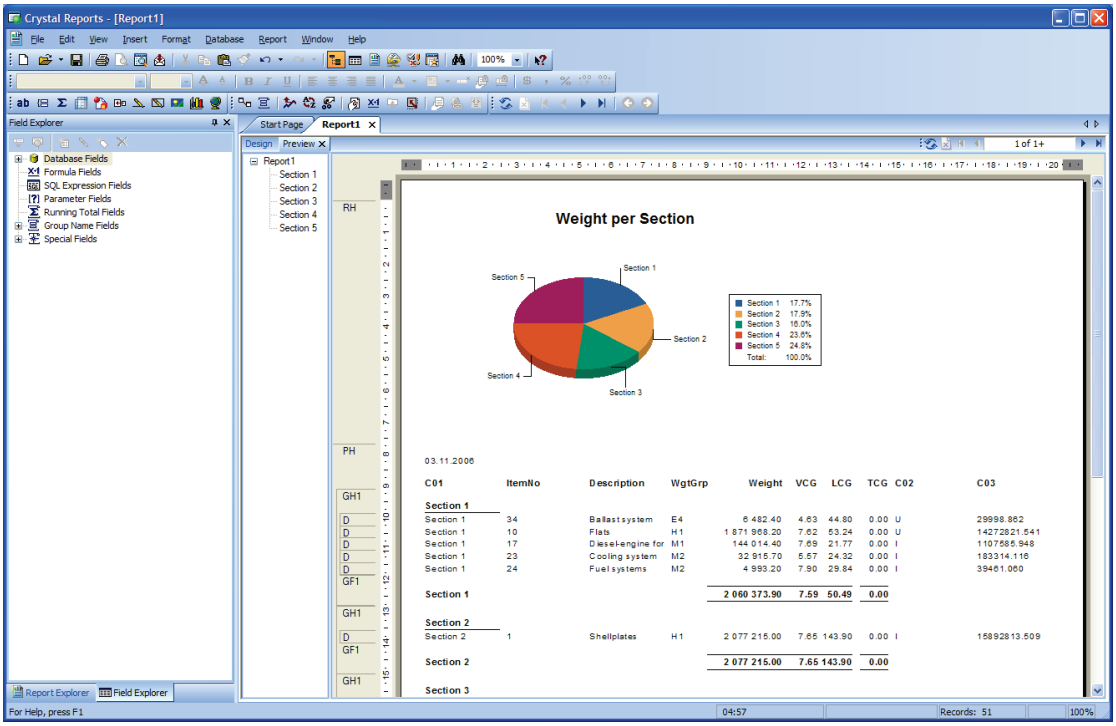


The selection formula should look like this:

{ITEM.ProjectID}={?ProjectID}

Click the **Save and close** button. The report data will now be filtered to include the selected ProjectID only.

Step 3: Formatting the Report



The preview shows that the report needs some formatting.

Some of the fields are too short to display the number. The easiest way to fix this is to click on the field in the preview area and expand it using the mouse.

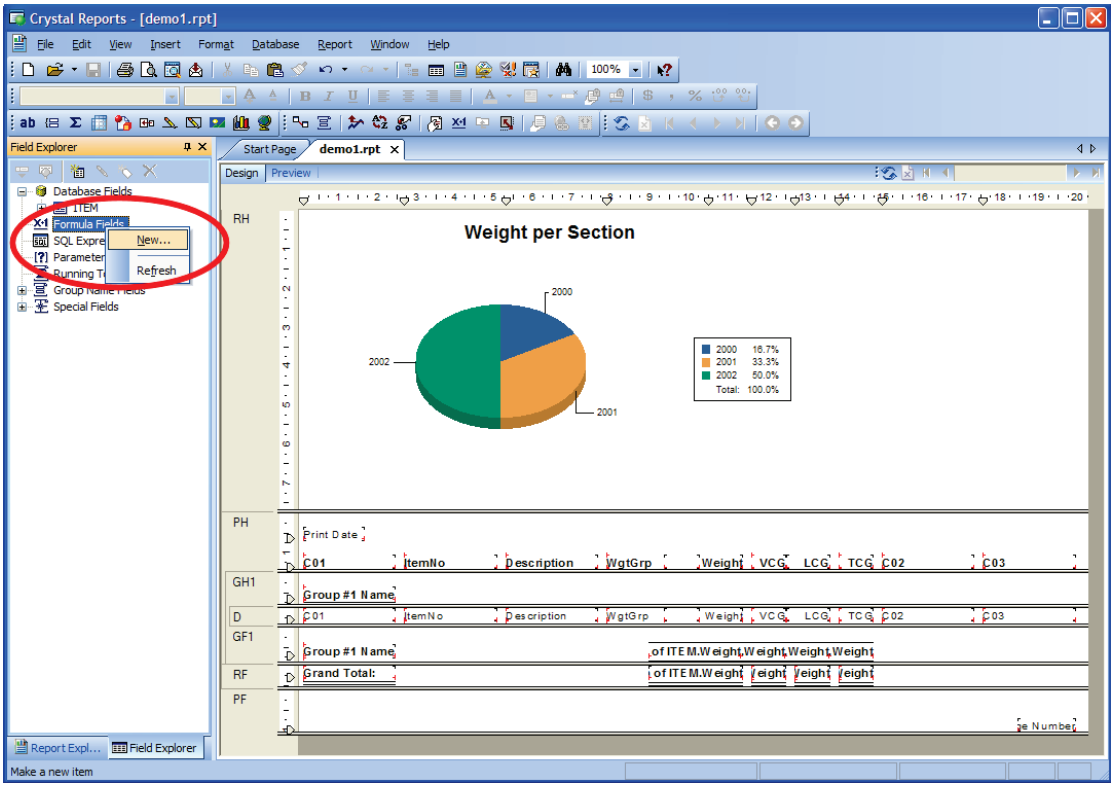
The group summary fields are in the wrong position. Drag and drop them into place.

To switch between preview and design mode, simply click the tab in the top left corner of the preview/design area.

Step 4: Displaying Values in a Different Unit

Next, we want to display the data in US-units. In the database, all data are stored in metric units.

Since the database does not contain any data in US-units, you need to create a formula to convert the value from metric to US units.



To create a new formula, you can right-click the **Formula Fields** in the **Field Explorer**. Select **New…**

Enter the name of the formula: '*US Weight*'.

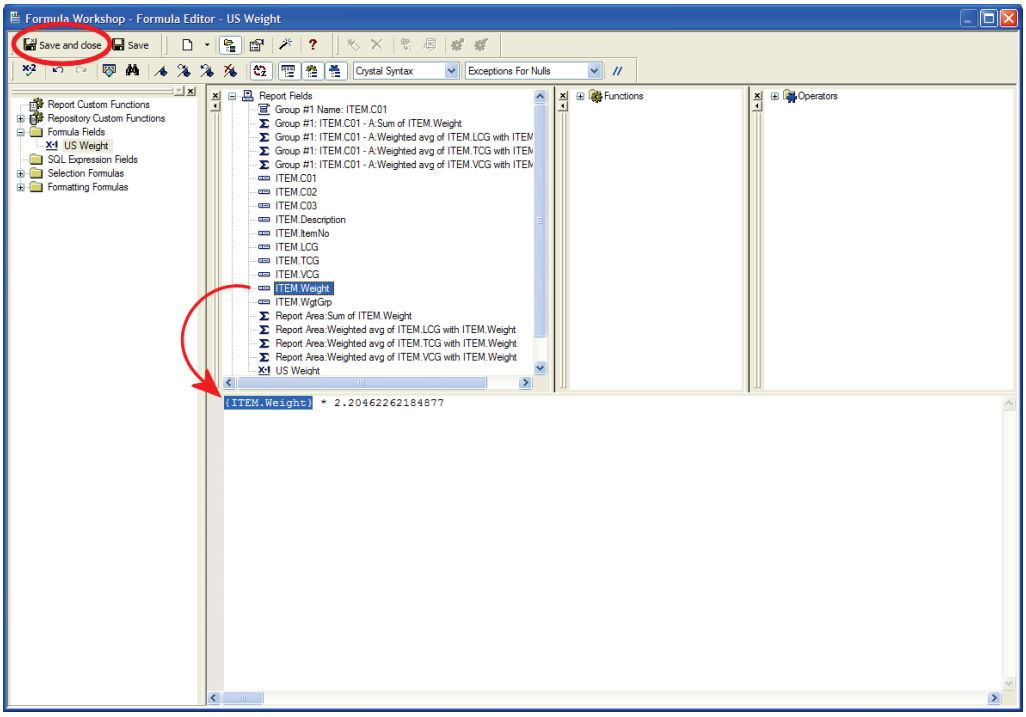
Now the **Formula Editor** will appear.

In the Formula editor, you will find a list of the available fields. Expand the branch '**Report Fields**'. Drag-and-drop the field '**ITEM.Weight**', into the formula editor.

Finish the formula by entering the multiplication sign (asterisk) and the conversion factor. The formula to convert from kg to lb should be:

{ITEM.Weight} * 2.20462262184877

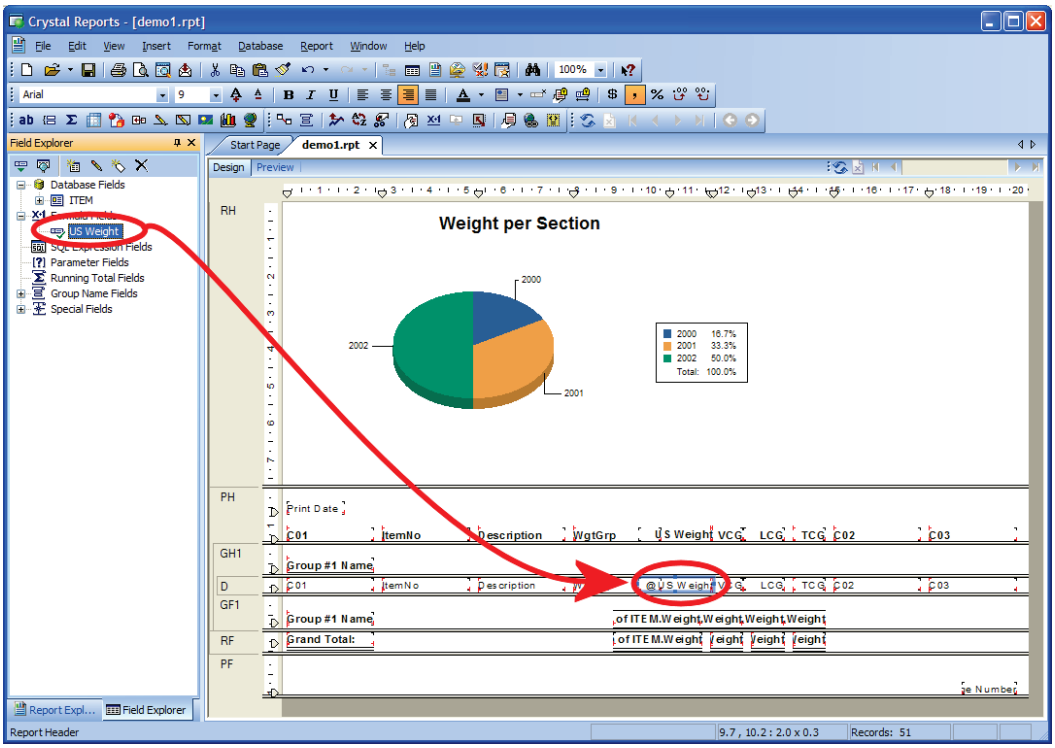
Click the **Save and close** button on the toolbar.



Back in the main window of Crystal Reports, you will find the new formula under '**Formula fields**' in the '**Field Explorer**'.

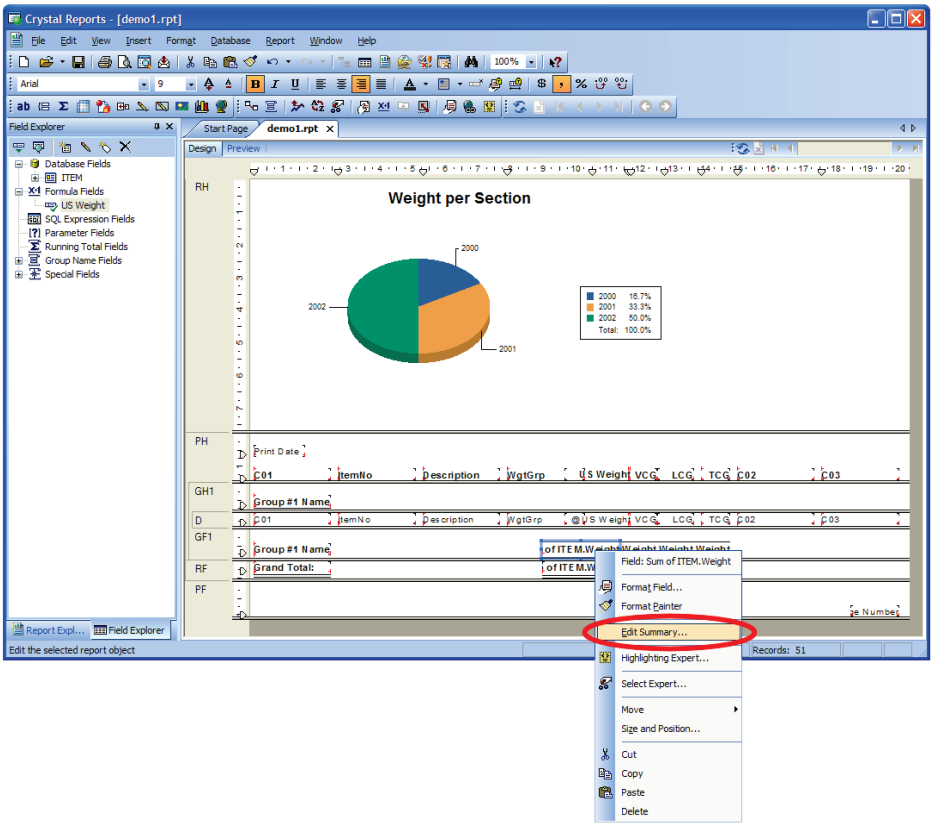
Before you insert the '**US Weight**' field, you need to delete the original weight field from the report. Simply select the field in the design view, and click the **Delete** button.

Now, you need to drag-and-drop the '**US Weight**' formula into the **Details** section of the report.

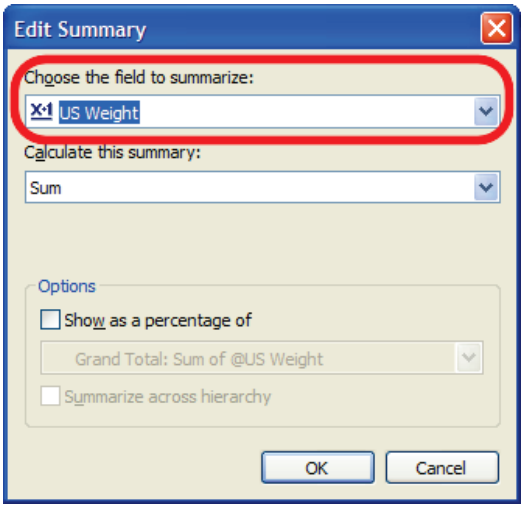


Finally, you must change the summary fields to summarize the ‘US Weight’ formula instead of the ‘Weight’ database-field.

To do this, select the **Group Summary** field in the design view, and click on it with the **right mouse button**. Select **Edit Summary** from the dropdown menu.



The ‘**Edit Summary**’-window pops up. Select **US Weight** in the **Choose the field to summarize** ListBox. Click **OK** to close the window. Repeat this for the Report Summary.



The report now shows the weight in pounds instead of kilograms.

Step 5: Summarizing a Custom Code

In the project we have used, Code C03 is the Vertical Moment. We would like to summarize the moments.

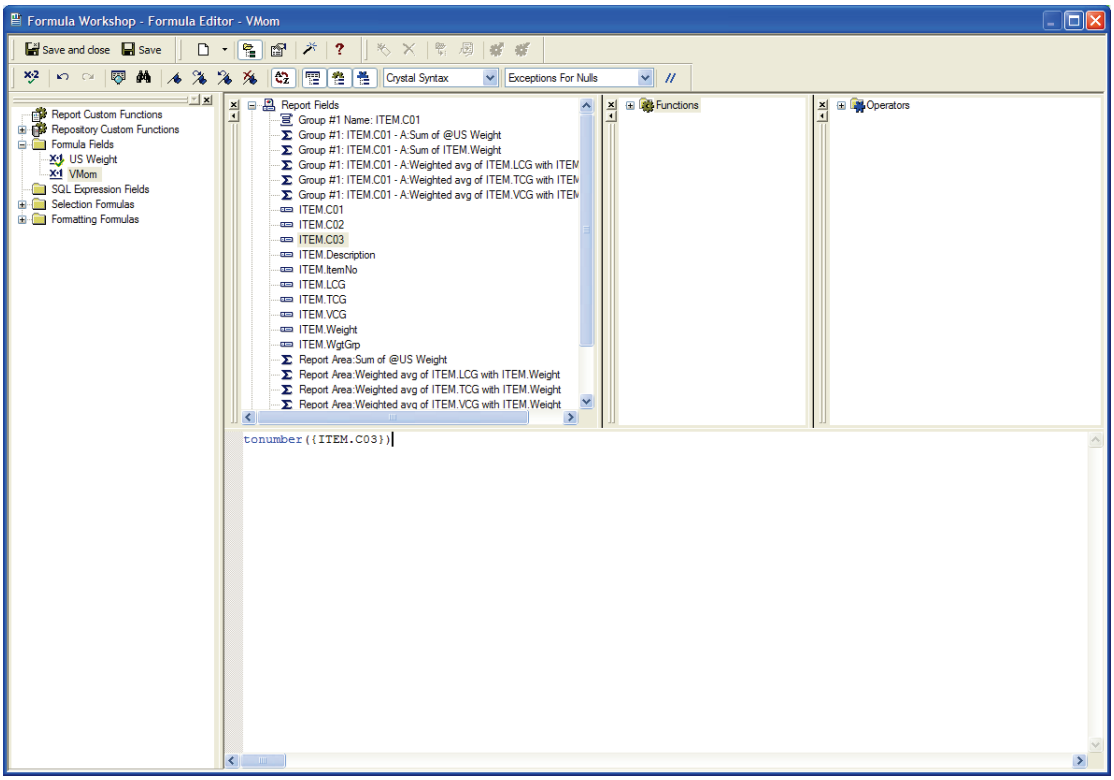
Crystal Reports can only summarize numerical fields. And since ShipWeight stores the code values as strings, you cannot summarize code values directly.

The solution is to create a formula that converts the string C03 into a numerical value.

Create a new formula named 'VMom'. In the Formula Editor drag-and-drop the field ITEM.C03 into the editor.

To convert a string to a number, you need to use a Crystal-Reports function named TONUMBER(). The formula should look like this:

tonumber({ITEM.C03})



Now, the formula '**VMom**' is available in the '**Field Explorer**'.

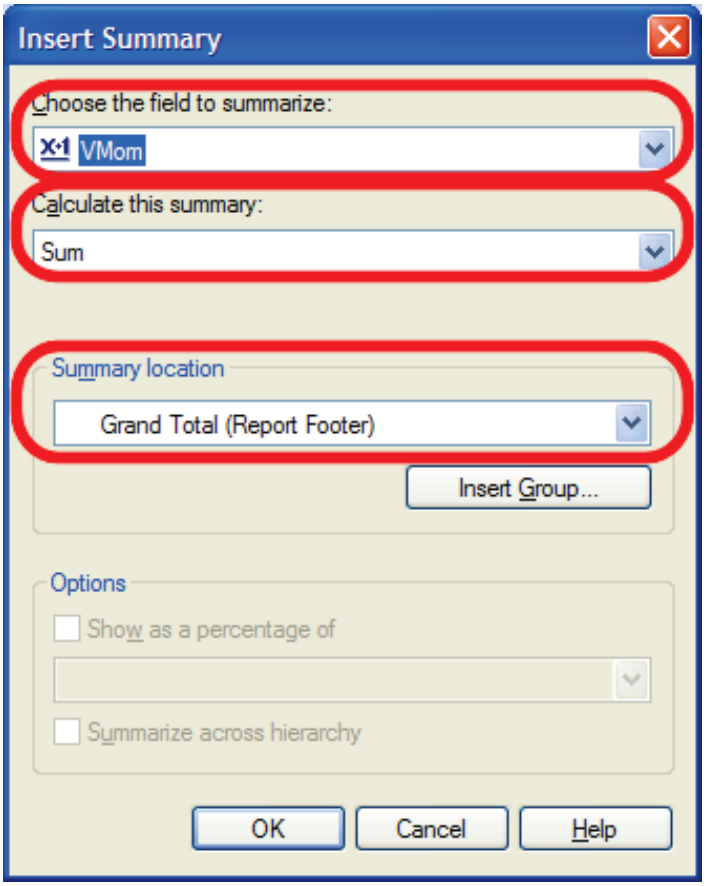
In the design area, select and delete the field '**C03**'. Then drag the formula '**VMom**' into the report.

To insert a summary of the Vertical Moment, choose **Insert Summary** from the **Insert** menu.

Now the **Insert Summary** window will appear. First, select '**VMom**' in the '**Choose the field to summarize**' list box.

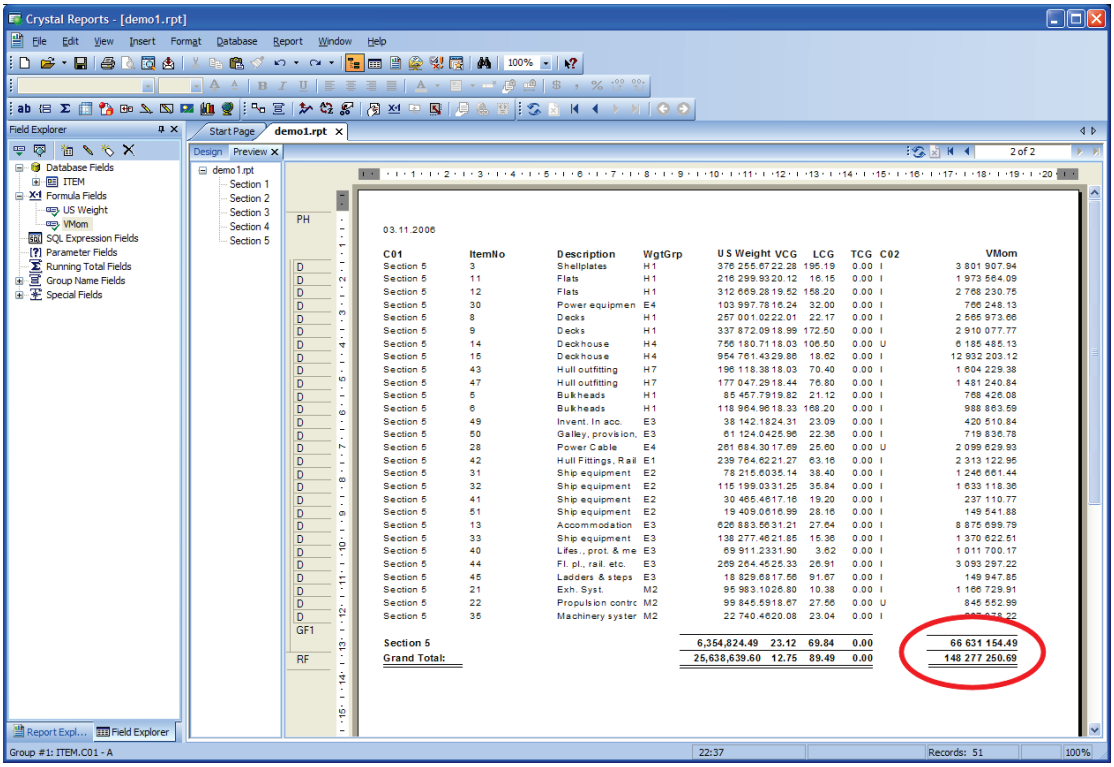
Then make sure the **Calculate this summary** option is set to '**Sum**'.

Finally, set 'Summary Location' to 'Grand Total (Report Footer)'

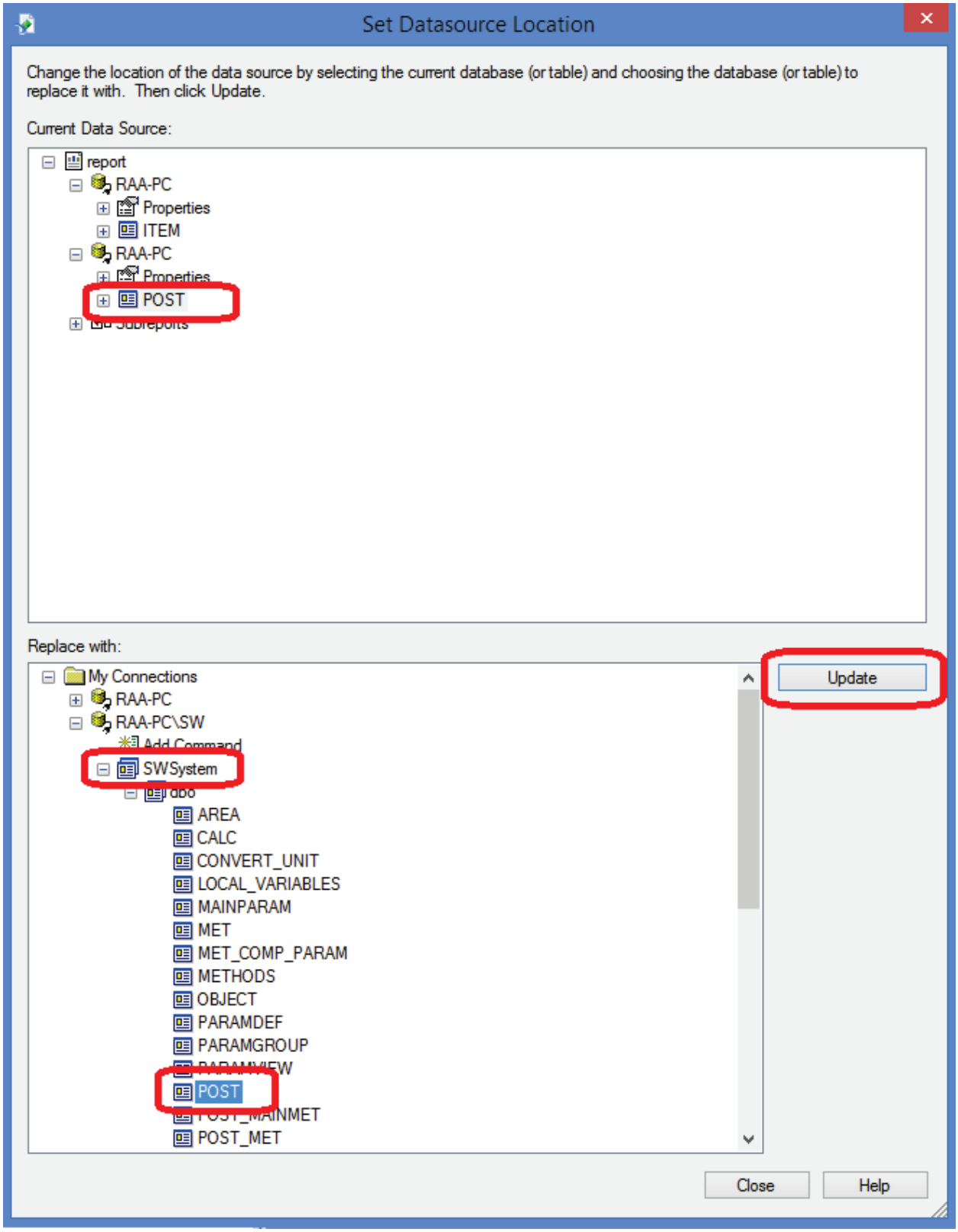


In the same way, insert a Group summary. Hint: in the 'Insert Summary' window, you will need to set the 'Summary location' to 'Group #1: ITEM.C01 – A'

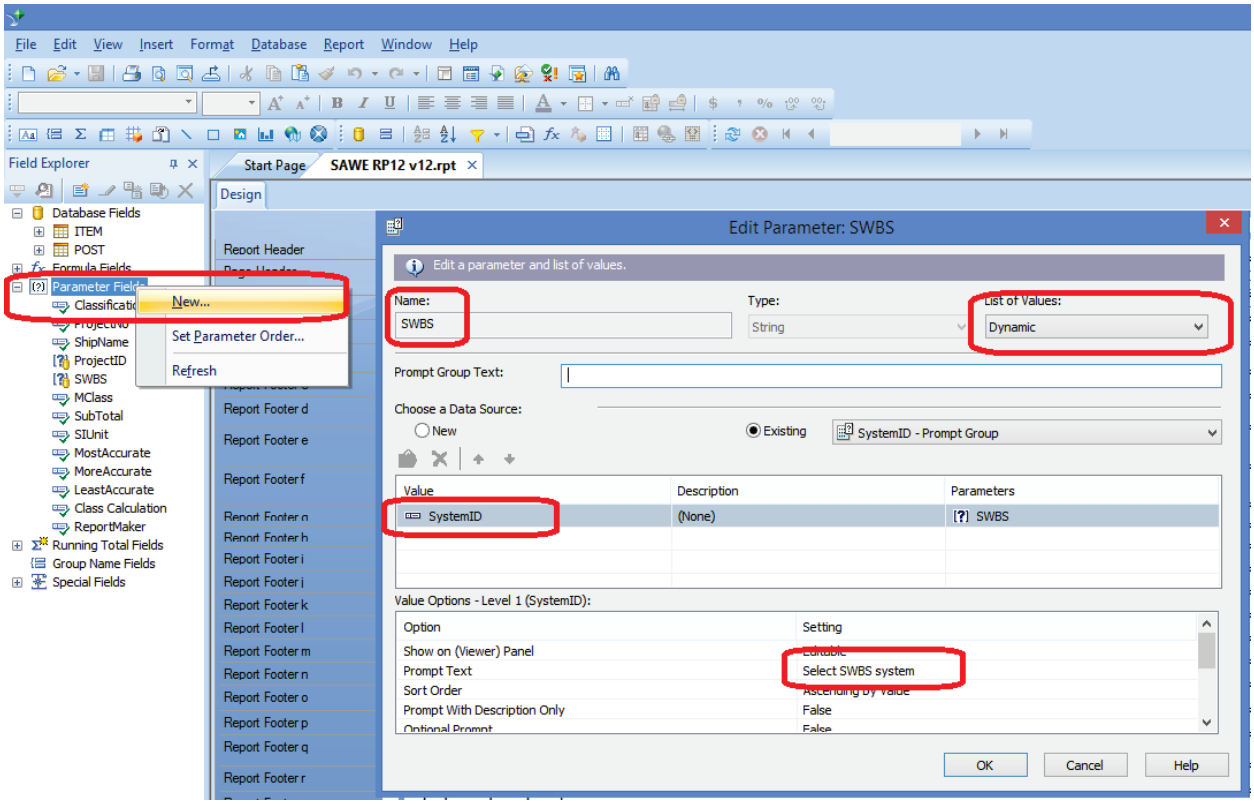
Now, you successfully have inserted a summary of code values into your report. Click the **Preview** tab to see the result.


Crystal Reports - [demo1.rpt]
File Edit View Insert Format Database Report Window Help
Field Explorer
Database Fields
ITEM
Formula Fields
US Weight
VMom
SQL Expression Fields
Parameter Fields
Running Total Fields
Group Name Fields
Special Fields
Start Page
demo1.rpt
Design Preview
demo1.rpt
Section 1
Section 2
Section 3
Section 4
Section 5
2 of 2
03.11.2006
C01 ItemNo Description WgtGrp US Weight VCG LCG TCG C02 VMom
Section 5 3 Shellplates H1 376 255.67 22.28 195.19 0.00 I 3 801 907.94
Section 5 11 Flats H1 216 299.93 20.12 16.15 0.00 I 1 973 564.09
Section 5 12 Flats H1 312 669.28 19.52 158.20 0.00 I 2 768 230.75
Section 5 30 Power equipmen E4 103 997.78 16.24 32.00 0.00 I 766 248.13
Section 5 8 Decks H1 257 001.02 22.01 22.17 0.00 I 2 565 973.66
Section 5 9 Decks H1 337 872.09 18.99 172.50 0.00 I 2 910 077.77
Section 5 14 Deckhouse H4 756 180.71 18.03 106.50 0.00 U 6 185 485.13
Section 5 15 Deckhouse H4 954 761.43 29.86 18.62 0.00 I 12 932 203.12
Section 5 43 Hull outfitting H7 196 118.38 18.03 70.40 0.00 I 1 604 229.38
Section 5 47 Hull outfitting H7 177 047.29 18.44 76.80 0.00 I 1 481 240.84
Section 5 5 Bulkheads H1 85 457.79 19.82 21.12 0.00 I 768 426.08
Section 5 6 Bulkheads H1 118 964.96 18.33 168.20 0.00 I 988 863.59
Section 5 49 Invent. In acc. E3 38 142.18 24.31 23.09 0.00 I 420 510.84
Section 5 50 Galley, provision, E3 61 124.04 25.96 22.36 0.00 I 719 836.78
Section 5 28 Power Cable E4 261 684.30 17.69 25.60 0.00 U 2 099 629.93
Section 5 42 Hull Fittings, Rail E1 239 764.62 21.27 63.16 0.00 I 2 313 122.95
Section 5 31 Ship equipment E2 78 215.60 35.14 38.40 0.00 I 1 246 661.44
Section 5 32 Ship equipment E2 115 199.03 31.25 35.84 0.00 I 1 633 118.36
Section 5 41 Ship equipment E2 30 465.46 17.16 19.20 0.00 I 237 110.77
Section 5 51 Ship equipment E2 19 409.06 16.99 28.16 0.00 I 149 541.88
Section 5 13 Accommodation E3 626 883.56 31.21 27.64 0.00 I 8 875 699.79
Section 5 33 Ship equipment E3 138 277.46 21.85 15.36 0.00 I 1 370 622.51
Section 5 40 Lifes., prot. & me E3 69 911.23 31.90 3.62 0.00 I 1 011 700.17
Section 5 44 Fl. pl., rail, etc. E3 269 264.45 25.33 26.91 0.00 I 3 093 297.22
Section 5 45 Ladders & steps E3 18 829.68 17.56 91.67 0.00 I 149 947.85
Section 5 21 Exh. Syst. M2 95 983.10 26.80 10.38 0.00 I 1 166 729.91
Section 5 22 Propulsion contro M2 99 845.59 18.67 27.56 0.00 U 845 552.99
Section 5 35 Machinery syster M2 22 740.46 20.08 23.04 0.00 I
Section 5 6,354,824.49 23.12 69.84 0.00 66 631 154.49
Grand Total: 25,638,639.60 12.75 89.49 0.00 148 277 250.69
PH
GF1
RF
Report Expl...
Field Explorer
Group #1: ITEM.C01 - A
22:37
Records: 51
100%

Step 6: Set a WBS Filter Parameter if Using SWSystem Tables



Create a new selection parameter “SWBS” in the report



Add a selection formula to the record selection in a the main report (unless only subreports):