

## 1.3 Defining Frame / Longitudinal positions

Within Tribon it is possible to define an object that contains the entire frame and longitudinal position information for the current project. Within this object it is possible to define both horizontal and longitudinal grid positions i.e. distances from the centreline and also vertical longitudinal positions i.e. distances from the baseline.

The object will be named SBH\_GENTAB and will be stored in the structural database (**SB\_OGDB**). The object is very important within a Tribon project as many of the applications use this object to calculate the position of model objects that are located using frame or longitudinal position references.

Before discussing the creation of the object a few Tribon numbering rules should be considered.

### 1.3.1 Frame numbering in Tribon

1. The frames must be integers i.e. they must not contain any letters, however they may be negative.
2. The number of the frames should be in the range [-899,2276]
3. The maximum number of frames is currently restricted to 500, unless the frames are consecutively numbered. In the latter case the frames may have numbers in the range [-99,500], i.e. 600 in total.
4. The relation between frame number and frame position may be quite arbitrary, e.g. they may be increasing with increasing x-co-ordinates, decreasing with increasing x-co-ordinate or set without any specific order with relation to the frame position.
5. The distance between frames may vary arbitrarily.

It is common within shipbuilding to locate frame number 0 at the aft perpendicular and to let the frames in the aft peak be identified by letters; A, B, C, etc. The rules above do not allow this denomination.

It is recommended that the letters be replaced by negative numbers (A → -1, B → -2, etc.).

In some regions of the world it is customary to have numbered frames only at web frames and to identify intermediate frames by adding letters to the main frame number, e.g. 56, 56A, 56B ..., 57, 57A, 57B, ... . It is recommended that the letters in the example are replaced as follows; 56, 561, 562, ..., 57, 571, 572, ... (or to 560, 561, 562, ..., 570, 571, 572, ... ).

### 1.3.2 Longitudinal position numbering in Tribon

Frame positions are in most cases defined at those locations along the ship where there are transversal hull members, either frames or webs, etc. In a similar way there are in most ships characteristic distances from the Centre Line (CL) and above the Base Line (BL) where hull members are located. E.g. longitudinals in the bottom and in the side in the midship section are located at positions which normally also define the position of stiffeners in decks, platforms, bulkheads, etc, and the position of girders. By referring to these positions one may define locations along the Y and Z axes as simple as e.g. Y=LP10 +100 and Z=LP35 -100. (LP10 +100 means 100mm in portside direction from Longitudinal Position number 10 in the bottom, LP35 -100 means 100 mm below Longitudinal Position 35 in the side).

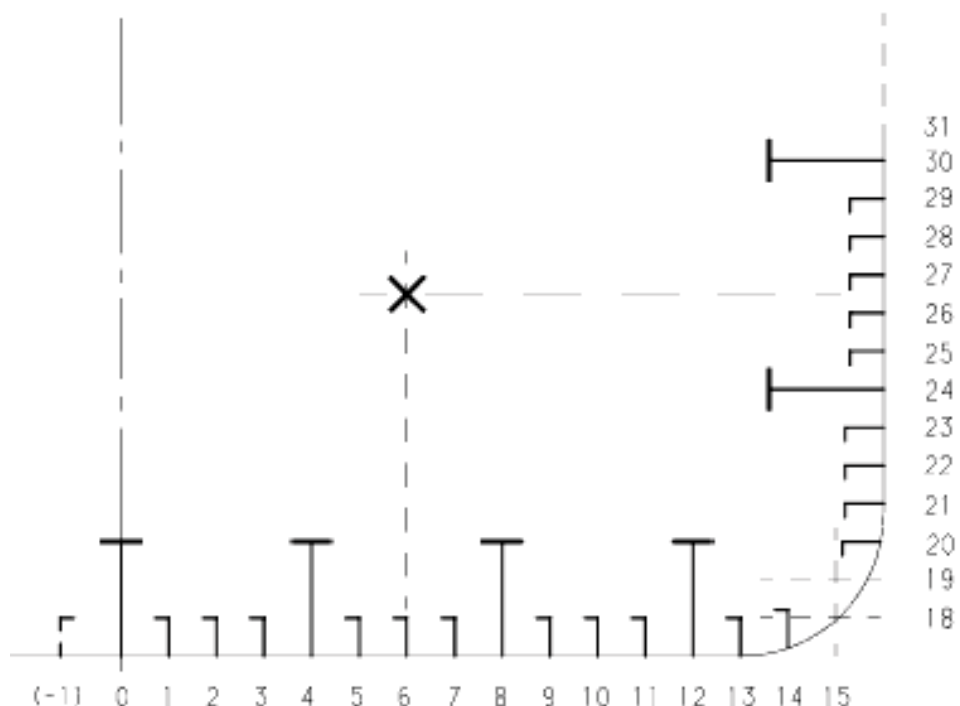
From a practical point of view it is recommended to let the longitudinal positions and their numbers coincide with the numbers and positions of actual longitudinals in the midship section. However, it should be noted that the longitudinal positions form a grid that need not have any direct relation with the physical longitudinal frames. E.g. if some longitudinals are replaced by girders there are "holes" in the numbering of longitudinals. However, the longitudinal positions should include all the positions, also those where there are no longitudinal frames.

The figure below shows schematically a typical midship frame with suggested longitudinal positions.

The point at the cross in the figure above may be located by Y=LP6, Z=LP26.5

The following rules should be considered:

1. The positions and the numbers should be related to those of actual longitudinal frames, if possible.
2. The longitudinal numbers should be in the interval [0,999]
3. The numbers for horizontal positions (along the Y axis) and vertical positions (along the Z axis) should not be the same.



4. It is quite possible to define a longitudinal position in the CL plane, i.e. where  $Y=0$ . This position may have number 0.
5. The relation between increasing/decreasing numbers and increasing/decreasing distances is arbitrary similar to what is stated for frames. This should be decided by the rules for longitudinal numbering, used by the yard.
6. There is no direct connection between the longitudinal position numbers and the generated physical longitudinal frames.
7. Longitudinal positions in the bottom are normally only defined on portside. Reference to the corresponding positions on the starboard side is done by negating the longitudinal number, e.g.  $Y=LP-20+100$ .

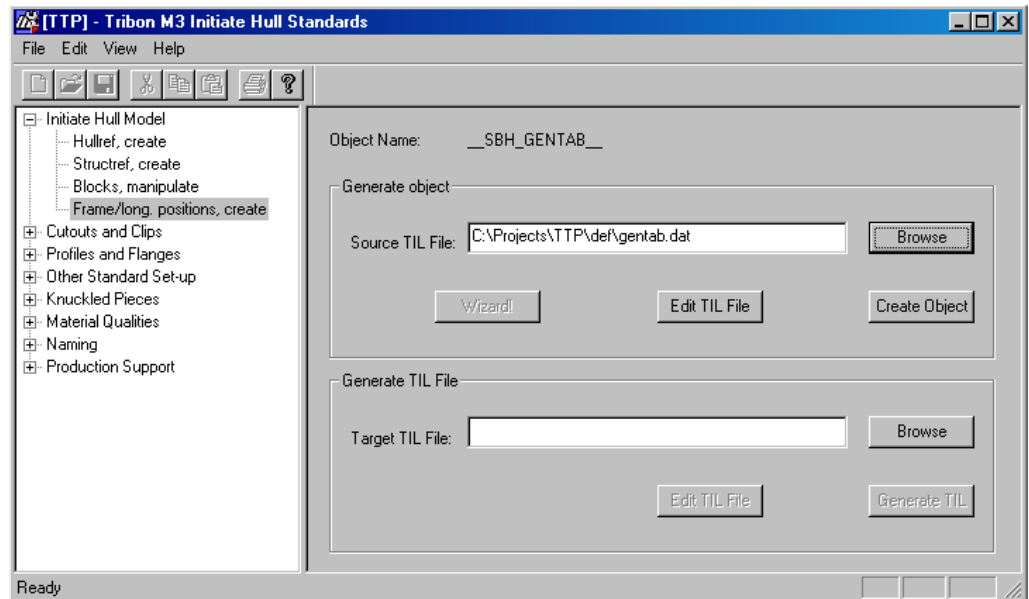
### 1.3.3 Creating the SBH GENTAB object

The **\_\_SBH\_GENTAB\_\_** object is created or modified by the **Frame/long positions, create** option. Clicking on this option will result in the following form being displayed:

The **\_\_SBH\_GENTAB\_\_** object is created by the system reading a suitable TIL file.

If an input file already exists then use the **Browse** button in the **Generate object** field to locate the file.

If no file exists then use the **Generate TIL** button in the **Generate TIL File** field to create a new file. The system will prompt for a name for the file and it should then be saved before exiting the editor. After creating the file use the **Browse** button in the **Generate object** field to locate the file.



When the file has been located successfully in the **Generate object** field, use the **Edit TIL File** button to open the file with the default Windows editor and this allows editing to suit.

After the successful editing of the file close and save it. Click the **Create object** button and the system will generate the **\_\_SBH\_GENTAB\_\_** object.

### 1.3.4 The contents of the TIL file

The input file is organised in "record types" with layout as described below. The format is free but it is recommended to have one record per line. The line width is limited to 80 characters. The number of records is unrestricted.

#### **Record Type 0**

This record must specify the name of the current structure reference object.

E.g. **0 "<NAME>STRUCTREF**

The line should consist of the digit zero followed by a blank space, then a single apostrophe followed immediately by another single apostrophe then a blank space followed by the name of the structref object.

#### **Record Type 2**

This record has no parameters. If it is included in the input file the system will produce an output file containing all of the frame and longitudinal positions generated along with their corresponding co-ordinate value. It is recommended that this record type is always included.

#### **Record Type 20**

This record type informs the system of the desired frame number and position.

E.g. **20 START STEP END COORD COORDSTEP**

<b>START</b>	The first frame number for which to add or change a co-ordinate
<b>STEP</b>	The difference in frame numbers for the current record
<b>END</b>	The last frame number for which to add or change a co-ordinate
<b>COORD</b>	The co-ordinate for the frame <b>START</b>
<b>COORDSTEP</b>	The distance between each frame in the range <b>START</b> → <b>END</b>

Recommended layout for record type 20 is as follows:

The first line must contain information for a single frame only (usually FR0)  
The next line(s) should contain information for any negative frame numbers  
The next line(s) should contain information for any positive frame numbers  
The next line(s) should contain information for any ice frames (positive and negative)

### **Record Type 30**

This record type informs the system of the horizontal longitudinal positions in the ship's bottom and their positions relative to the centreline. The records must be given such that the co-ordinates are in strictly ascending or descending order.

E.g. **30 START STEP END COORD COORDSTEP**

<b>START</b>	The first longitudinal for which to add or change a co-ordinate
<b>STEP</b>	The difference in longitudinal numbers for the current record
<b>END</b>	The last longl number for which to add or change a co-ordinate
<b>COORD</b>	The co-ordinate for the longitudinal <b>START</b>
<b>COORDSTEP</b>	The distance between each longitudinal in the range <b>START</b> → <b>END</b>

*The longitudinal numbers should not be multiplied by 10 and they have to be equal to or greater than 0.*

### **Record Type 40**

This record type informs the system of the vertical longitudinal positions in the ship's side and their positions relative to the base line. The records must be given so that the co-ordinates are in strictly ascending or descending order.

E.g. **40 START STEP END COORD COORDSTEP**

<b>START</b>	The first longl number for which to add or change a co-ordinate
<b>STEP</b>	The difference in longitudinal numbers for the current record
<b>END</b>	The last longl number for which to add or change a co-ordinate
<b>COORD</b>	The co-ordinate for the longitudinal <b>START</b>
<b>COORDSTEP</b>	The distance between each longitudinal in the range <b>START</b> → <b>END</b>

*The longitudinal numbers should not be multiplied by 10 and the first number should be greater than the final horizontal position number defined in record type 30.*

### **Example of input**

```

gentab.dat - Notepad
File Edit Format Help
0 TTPSTRUCTREF
2
20 1 1 20 8310 850
20 21 1 40 25160 700
20 41 1 100 38885 425
20 101 1 122 64500 500
20 123 1 214 75600 600
30 0 1 4 0 500
30 5 1 10 2510 640
30 11 1 16 6390 680
40 19 1 37 1400 700

```

### **Resulting frame positions:**

FR1 is at X=8310, frame numbers then increase in steps of 1 until FR20 is reached with each frame being 850mm from the previous one  
FR21 is then at X=25160, the frame numbers then increase in steps of 1 until FR40 is reached with each frame being 700mm from the previous one.  
FR41 is then at X=38885 the frame numbers then increase in steps of 1 until FR100 is reached with each frame being 425mm from the previous one.  
FR101 is at X=64500 and the frame numbers increase in steps of 1 until FR122 is reached with each frame being 500mm from the previous one.  
FR123 is at X=75600 and the frame numbers increase in steps of 1 until FR214 is reached with each frame being 600mm from the previous one.

### **Resulting horizontal longitudinal positions:**

LP0 is at Y=0 and the longitudinal position numbers then increase in steps of 1 until LP4 is reached with each longitudinal position being 500 from the previous one.  
LP5 is at Y=2510 and the longitudinal position numbers then increase in steps of 1 until LP10 is reached with each longitudinal position being 640 from the previous one.  
LP11 is at Y=6390 and the longitudinal position numbers then increase in steps of 1 until LP16 is reached with each longitudinal position being 680 from the previous one.

### **Resulting vertical longitudinal positions:**

LP19 is at Z=1400 and the longitudinal position numbers then increase in steps of 1 until LP37 is reached with each longitudinal position being 700 from the previous one.

Additional increments may be added as required.