INSTRUCTIONS FOR USE OF THE SQUAT CALCULATION PROGRAMME   9.11.2017

The squat calculation program is an instrument for calculation of squat as a function of its speed in any cross section of the channel. The program is based on the **Huuska-Guliev** method and is applicable to unrestricted and restricted channels.
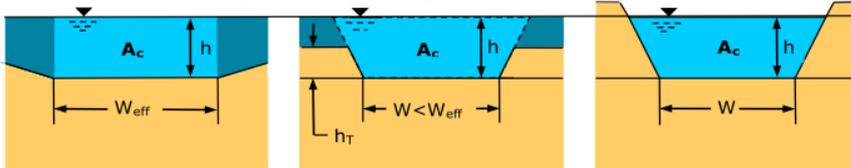
BASIC DATA TO BE ENTERED
Channel type
Choose the channel type responding the calculation point:
A: unrestricted channel
B: restricted channel (dredged channel or narrow passage)
C: canal (canal or very narrow passage)

General data:
- Ship name and type
- Channel and the calculation point; calculation date

General data do not affect to the calculation. They are background info when using and storing the results.

Data for calculation:
- ship's length L_{pp} (m) (length between perpendiculars, i.e. length at waterline, lpp).
- ship's beam B (m)
- ship draught T (m)
- ship's block coefficient C_B, which refers to the ratio between the ship's underwater cross section and a rectangle of the same dimensions (the more streamlined the ship is, the lower the ratio).

Channel data for the cross section of the channel:
- water depth h (mean, relevant water depth) (m)
- safe clearance depth hs (m)
- net underkeel clearance (in approach channels normally 0.5 m, inland channels 0,3 m)
- clearance for ship motions (assessment of any motions except squat) (m).

In channel type B the following data must be given in addition:
- height of the slope h_T (m)
- scale of slope n (for instance n = 0,25, if the scale of slope is 1 : 4)
- channel width W (m).

In channel type C the same data except height of the slope (not used).

In addition, enter the minimum speed (knots) for which you want results.

The fields for the basic data are <mark>yellow</mark>. Enter new values upon the old ones. All other fields are locked. Use comma as a decimal mark. Notice that when you enter the basic data the same data update simultaneously to all channel types A, B and C.

If the constraints for the formula (announced in the worksheet) exceed those fields turn red. The software makes calculation also in that case but the accuracy of the method gets worse.

THE RESULTS
The program shows the size of the ship's squat in meters in tabular form and as a curve relative to speed. The curve shows visually the critical speed at which the squat has used all the gross underkeel clearance reserved for it.

The calculation results are presented in the form of two different values /curves depending on the squat factor C_0:
- $C_0 = 2{,}4$, basic value used in concept design
- $C_0 = 2{,}0$, discretionary and case specific value

This calculation method and program is only a simplified mathematical approximation model and generalization of the reality. This should be kept in mind when using the program and the results.

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