

# *Polski Rejestr Statków*

## **RULES**

**AMENDMENTS NO. 1/2010**

to

**PUBLICATION NO. 18/P**

**ZONE STRENGTH ANALYSIS OF BULK CARRIER**

**HULL STRUCTURE**

**1995**



**GDAŃSK**

*Amendments No. 1/2010 to Publication No. 18/P – Zone Strength Analysis of Bulk Carrier Hull Structure – 1995*, were approved by the PRS Board on 8 February 2010 and enter into force on 1 March 2010.

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PRS/AW, 02/2010

***The following amendments to Publication No. 18/P – Zone Strength Analysis of Bulk Carrier Hull Structure – 1995 have been introduced:***

1. *Sub-chapter 1.1 has been amended to read:*

## **1.1 Application**

**1.1.1** The requirements of the present *Publication* apply to zone strength assessment of hull structure of bulk carriers having the length  $L_0 < 90$  m.

For ships having the length  $L_0 \geq 90$  m, the requirements specified in *Publication No. 84/P – Requirements Concerning the Construction and Strength of the Hull and Hull Equipment of Sea-going Bulk Carriers of 90 m in Length and above*, apply.

### **1.1.2 General**

**1.1.2.1** The requirements of the present *Publication* are based on the assumption that calculations are made using 2-dimensional FEM models, having the form of framework and grillage.

Computer programs applied are to take into account finite elements bending, shear and axial or torsional deformations.

The calculation procedure for bulk carrier with vertically corrugated transverse bulkheads with stools at the inner bottom is shown in Fig. 1.1.2.1.

In the case of bulkheads without stools, the effect of the bulkheads on the double bottom structure and the stress analysis of the bulkhead structure may be based on a simple beam model.

**1.1.2.2** Instead of calculations made according to the requirements specified in 1.1.2.1, equivalent calculations may be performed using a 3-dimensional frame model consisting of the bottom girders, side frames and transverse bulkhead girders.

In such case the requirements, set forth in Chapters 2 and 4, as well as the requirements of Chapter 3 – within the relevant scope, are to be applied.

**1.1.2.3** Instead of calculations made according to the requirements specified in 1.1.2.1, it is recommended to carry out zone strength analysis of bulk carrier hull structure using shell and rod FEM model, complying with the general requirements of Chapter 14, *Part II – Hull* of the *Rules for the Classification and Construction of Sea-going Ships*.

FEM model application, boundary conditions and load are to comply with the requirements stated in the present *Publication*.

The values of permissible stresses are to be taken in accordance with Chapter 14, *Part II – Hull*. For checking the stability of structural elements, the requirements of paragraph 4.1.2 of this *Publication* are to be applied.

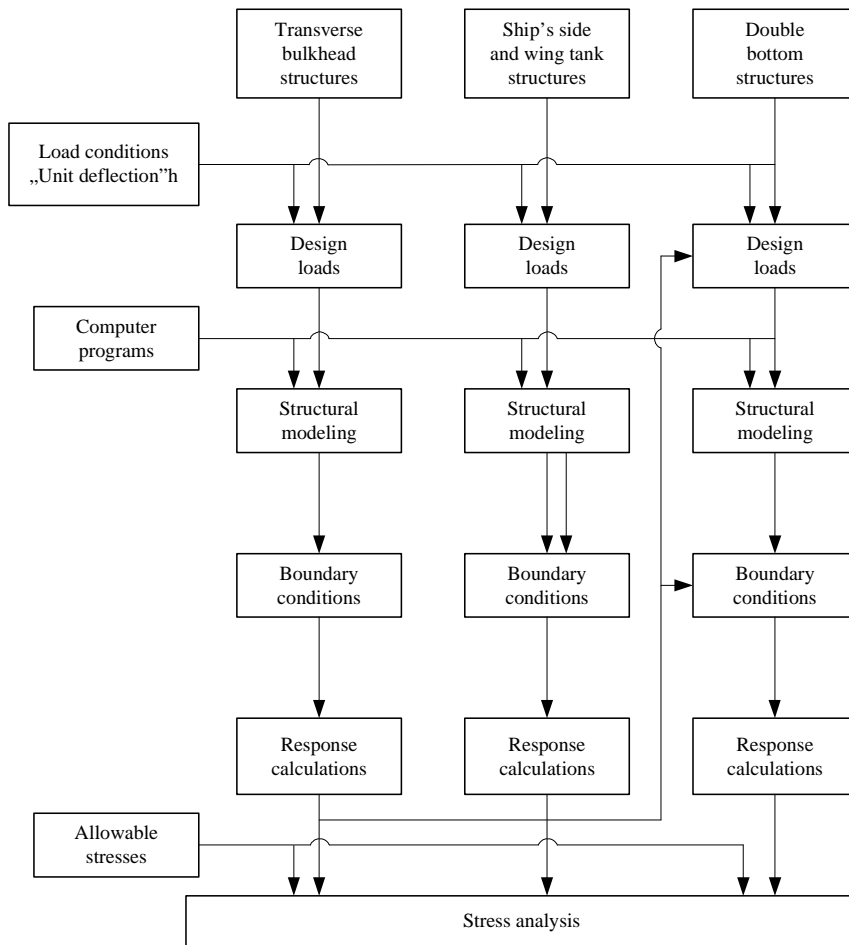


Fig. 1.1.2.1 Strength analysis procedure

2. *In paragraphs 2.1.2, 2.2.1 and 2.8.1, the following amendments have been made:*
  - the mark ZM has been replaced by the mark HC/ALT;
  - the mark ZM/ZP has been replaced by the mark HC/E.
  
3. *In paragraph 3.1.6, the last line has been deleted:*

unless an additional mark WZR is affixed to the symbol of class.