



## MarCom - WORKING GROUP 48

### Guidelines for Port Constructions, related to Bowthrusters

#### 1. Background

Report of Working Group 22 “Guidelines for the design of armoured slopes under open piled quay walls” (1997) gives a practical but rather rough method for determination of the size of rock on slopes under attack by propeller induced currents. However problems have been with the design guidelines for armoured slopes under attack by bowthrusters because of the increased use and power of bowthrusters. Especially large fast vessels will cause problems for slope protection but also problems have been reported with relatively small vessels when bowthrusters have been used. Stability of riprap has become relevant and a more accurate method is needed to protect port structures and especially armoured slopes cost effectively against the bowthruuster induced currents.

#### 2. Terms to be investigated:

The report should cover following subjects:

- 1) Noticed damages of port structures under attack of bowthrusters and the related information about ships, protection and structure type (a questionnaire to the port authorities etc.)
- 2) Identification of the problem
- 3) Velocity fields caused by bowthrusters (also possible contacts to the manufacturers of these equipments)
- 4) Scour in front of quay walls, damage locations and stability risks of the quay structures
- 5) Damages to structural material (including the effect of ice).
- 6) Design criteria for slope and bed protection
- 7) Recommendations for port structures (guidelines for the design)

#### 3. Composition of the Working Group:

Members of the working group should have experience in the field of hydraulic engineering or port structures but also experts who are familiar with the behaviour and effects of bowthrusters are needed.

Most of the work will be a detailed literature review of recent studies of the behaviour and effects of bowthrusters followed by a consultation with the port authorities and consultants who have experience either in damages caused by bowthrusters or design/repair methods of port structures under attack of bowthrusters.