



Terms of reference

**for PIANC Working Group
Berthing velocities and fender design**

1. Historical Background - Definition of the problem :

In the PIANC guidelines for fender design, (*Report of PIANC MarCom Working Group 33 - "Guidelines for the Design of Fender Systems"*) published in 2002, the issues of vessel approach velocities were based on research done by Baker in 1953 and Broisma in 1977 and the most recent data used by the British Standard on Fenders (BS 6349 Part 4 1994 Maritime structures — Code of practice for design of fendering and mooring systems). This data is now quite old and significantly better information now exists on berthing velocities from terminals equipped with modern berthing aids.

2. Objective and product of the study :

Section 4.2.3 of the PIANC WG 33 guidelines advises that *"designers must consider that the design values for the approach velocity should be close to the expected actual berthing speeds. It is the task of the designer to obtain data on the local conditions and seek out vessel operators, port engineers, ship owners etc to gain insight into the applicable conditions and to decide on the most likely and/ or appropriate approach velocity."*

In practice this information is difficult to obtain and "rule of thumb" parameters on vessel approach speeds are frequently used in the absence of reliable data.

The objective of this Working Group (WG) will be to produce a report that provides data on actual recorded vessel approaches under a range of environmental conditions and provides clear guidelines to designers for the use of appropriate vessel design speeds. It is expected that the WG report will focus on larger ships for which quantitative berthing velocity data can be obtained, particularly bulk carriers (dry and liquid including gas carriers), container ships and large ferries.

The emphasis of this WG will be the collection of quantitative data regarding berthing velocities (speeds and directions), and their use in the design of fender systems.

3. Previous PIANC reports :

PIANC MarCom Working Group 33 - "Guidelines for the Design of Fender Systems" - published in 2002,

4. Method of approach :

The WG will contact a number of ports and terminals worldwide in order to collect suitable up-to-date data on actual vessel approach velocities from records of terminal berthing aid systems. The WG will cooperate with IAPH in approaching ports and terminals worldwide for this information

In addition the WG will approach organisations such as OCIMF and SIGTTO as well as manufacturers and suppliers of fenders and vessel berthing aids to assist in data collection and processing. Furthermore PIANC will approach all member ports and individual members with a similar request for relevant information.

The Working Group will need to understand and ensure the commercial confidentiality of such data, noting the possible reluctance to release information on vessel approach speeds for fear of some facilities being considered "more difficult or exposed" than others. Ports and terminals will need to recognise that this information is required to understand in more detail the vessel approach velocities for berth and fender design, to allow efficient design of fendering systems, and that any such information supplied will be treated in confidence and will be not be attributed to a specific terminal or location.

The results of the feedback from ports and terminals will be reviewed, processed and tabulated by the Working Group and based on this data, recommendations for design vessel approach speeds will be made for a range of types of vessel, environmental conditions, degree of berthing assistance (tugs) and degree of exposure of the berth.

5. Desirable disciplines of the members of the Working Group :

It is proposed this working group should include practising engineers engaged in maritime disciplines or responsible for design or use of maritime infrastructure and with a particular knowledge of fender design.

6. Relevance for countries in transition :

The recommendations of the Working Group will be appropriate for the design of new marine facilities in countries in transition.