



**PIANC**

The World Association for  
Waterborne Transport Infrastructure

## **Recommendations for the Design of Marine Oil Terminals**

### **Terms of Reference**

#### **1. Historical Background (definition of the problem)**

In 2005, the State of California, USA completed a set of comprehensive engineering standards for the design of hydrocarbon-based liquid bulk terminals, otherwise known as marine oil terminals (MOTs). These standards, applicable for rehabilitation of existing terminals as well as the design of new terminals, set minimum engineering design standards that all terminal operators must follow. Promulgated by the California State Lands Commission, Marine Facilities Division, the standards require that all MOTs be audited against the standards to determine level of compliance. The standards focus on avoiding and limiting oil or refined hydrocarbon product spills and cover all technical aspects, including :

- Condition Assessment Inspections – Above and Below Water
- Mooring and Berthing Analysis, Including the Effects of Passing Vessels
- Structural Loading and Load Combinations
- Structural and Geotechnical Seismic Analysis
- Structural Analysis and Design of Components
- Fire Prevention, Detection and Suppression
- Piping and Pipelines
- Mechanical and Electrical Equipment
- Electrical Systems

#### **2. Objectives of the working Group**

Review existing standards used by different operators and their availability, and try to underline the basic common approaches in order to deliver recommendations for the design of Marine Oil Terminals.

Such a WG would provide guidance to owners and designers of MOTs worldwide, to provide safe, efficient and cost-effective terminals and thereby protect public health, safety and the environment. To be clear, this document would only involve oil and petrochemical type products derived from hydrocarbons but not include gas terminals as liquid gas terminals have a different level of hazard and requirements that justify a document of this type on their own.

#### **3. Earlier Reports to be Reviewed**

“Marine Oil Terminal Engineering and Maintenance Standards” Chapter 31F, Title 24, Part 2 California Code of Regulations, promulgated by the State Lands Commission, plus any other standards and references from organizations such as API, OCIMF, SIGTTO, PIANC, NFPA, and Nautical Institute that can be found.

#### **4. Matters to be Investigated**

Whether any owners, oil companies, regulators, or other government agencies have existing engineering standards for marine oil terminals that they would be willing to share with the committee for use.

Case studies and best practices should be collected and worked out.

The environmental consequences of oil spills fall out of the scope of the WG.

#### **5. Suggested Final Product of the working Group**

Recommendations in the form of a guide relevant for designing a marine oil terminal.

Since design and maintenance are often tightly connected in industrial engineering, the guide should also provide valuable guidance on design related maintenance of marine oil terminals.

#### **6. Desirable Disciplines of the Members of the working Group**

Practicing and experienced engineers from oil companies, marine oil terminal operating companies, port authorities, consultancy, familiar with relevant design standards and with risk assessment methods.

Members from organizations like SIGGTO, OICMF... would be welcomed.

#### **7. Relevance for Countries in Transition**

The guideline would aid countries in transition since compliance with the standards will result in improved safety and environmental protection, taking advantage of the collective knowledge of the developed countries and major global stakeholders.