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KLM Technology Group #03-12 Block Aronia, Jalan Sri Perkasa 2 Taman Tampoi Utama 81200 Johor Bahru Malaysia	<b>MATERIAL AND EQUIPMENT STANDARD  FOR FIRE FIGHTING FLOATING VESSELS  (PROJECT STANDARDS AND SPECIFICATIONS)</b>	

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## SCOPE

This Project Standard and Specification covers the initial consideration and planning, quotation requirement, inspections quality control, certifications and all other purchase formalities of equipment intended for fire fighting and rescue operations on offshore and onshore oil loading terminals of the Petroleum and Petrochemical Industries.

## REFERENCES

Throughout this Standard the following dated and undated standards/codes are referred to. These referenced documents shall, to the extent specified herein, form a part of this standard. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date shall be mutually agreed upon by the Company and the Vendor. For undated references, the latest edition of the referenced documents (including any supplements and amendments) applies.

BSI (British Standard Institution) - BS 336

## DEFINITIONS AND TERMINOLOGY

**Cargo** - In this standard refers to liquids having flash point below 60°C.

**Deck** - A platform in a ship.

**Deck House** - A super structure (as a cabin) built on the upper deck of a ship but not extending to the sides.

**Deck Lights** - A piece of heavy glass set in a ship deck or hull to admit light.

**Sea Chests** - A casting connected to the side of a ship below the water line and to a valve for obtaining sea water.

**Thrusters** - The force that is exerted endwise through a propeller shaft due to reaction of the water on the blades revolving.

**Vessel** - A craft used as a means of transportation on water.

**Vessels Propulsion** - The action driving forward or ahead.

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## UNITS

This Standard is based on International System of Units (SI) except where otherwise specified.

## SERVICE CONDITIONS

### General

Fire fighting tugs and vessels are generally stationed at oil loading terminals while the tugs' normal duties are berthing and unberthing the tankers. They shall participate in fire fighting and rescue operations in case of fire and emergency conditions.

### Site Conditions

The vessels shall be designed and fabricated for service at loading terminals, the temperature, humidity, dust, gaseous atmosphere and wind velocity should be considered in accordance with local conditions. The sea water specific gravity is 1.03 with salt content of 35-40 thousands part per million and temperature of approx. 32°C, can be used for making foam.

### Operational Conditions

One of the main duties of tugs is to tow or push off the tanker on fire or unberth the neighboring tankers to the safe locations and attend fire fighting and rescue operations. When directed, the tugs also will attend the ships on fire and other emergencies in Persian Gulf. The tugs may also participate in sea oil pollution control.

## INITIAL CONSULTATIONS AND PLANNING BEFORE PURCHASING ORDER

### Specification and Design Stages

The owner should state his requirements giving as full description as possible that the supplier can prepare his proposal. Then both parties should review the relevant informations to enable them to prepare a suitable material specifications and design of equipment. Selected authorities who are expert in the design and materials shall be consulted.

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## Planning

In planning and layout design of fire fighting equipment for vessels, particular consideration shall be given to the following:

- saving regard to the potential fire hazard in value, the requirement of fire protection and emergency equipment shall be considered;
- consideration shall also be given to the latest international convention for the safety of life at sea and the Iranian by-laws and regulations.

## QUOTATION AND TECHNICAL INFORMATIONS

The Vendor shall include the following technical informations with the quotation:

1. General technical information of the vessel including:
  - a. the vessel size, propulsion, side thrusters, power, stability and control system;
  - b. communication systems;
  - c. fire fighter class notation;
  - d. number of crew and accommodation layout;
  - e. fuel storage capacity.
2. Fire fighting systems
  - a. number of fire fighting monitors, type and design;
  - b. length and height of throw water/foam;
  - c. type of monitor control and design support;
  - d. number of water pumps with detail of specifications including data sheet and flow charts;
  - e. fire water piping, foam generating and proportioning system;
  - f. foam concentrate tank capacity, type of foam concentrate and spare containers (the type of foam agent shall e specified in purchase order);
  - g. fire alarm systems.
3. Self fire protection of the vessel
  - a. fire water spray system;
  - b. pipe line and nozzles;
  - c. pumping system, capacity and data;
  - d. fire hose stations;
  - e. high expansion foam generator and capacity;

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- f. fire extinguishers.
4. Miscellaneous
- a. flood and search lights;
  - b. sea water inlets and sea chest;
  - c. firemen outfits;
  - d. breathing apparatus and compressor air supply;
  - e. corrosion protection and paints;
  - f. ventilation and air conditioning systems;
  - g. salvage operation system;
  - h. sign boards, marking and notices;
  - i. power generator and electrical system layout.
5. Emergency and rescue equipment
- a. life safety and rescue equipment;
  - b. first aid and resuscitation equipment.

## **DRAWINGS AND DOCUMENTATION**

### **Drawings**

Complete drawings, flow charts, and data sheets shall be in English language and shall be attached to the fabricators vendor) quotation.

### **Documentations**

1. At ordering stage

The manufacturer shall furnish the Purchaser within 6 weeks after receipt of purchase order the following informations: Five sets of dimensional drawings of the fire fighting vessel and its components for NIOC approval. No fabrication shall start until after manufacturer receipt of approved drawings. The manufacturer shall supply one set of corrected certified reproducible drawings within three weeks after receipt of drawings which have been approved or marked (approved as noted).

2. At hand over stage

The manufacturer shall furnish the owner with the following informations prior to hand-over:

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- a. Ten copies of test certification. This will be prerequisites for final approval and invoice approval.
- b. Ten sets of recommended spare parts list for two years operation and one list of special tools for stock.
- c. Ten sets of maintenance and operating instructions including comprehensive trouble shooting instructions.
- d. The following informations shall be included in an approved operation manual kept on board:
  - detailed description of each fire fighting systems and the equipment covered by the classification;
  - instruction for use, testing and maintenance of the fire fighting installations and the equipment;
  - instructions for operation of the vessel during fire fighting.

### **Information**

The manufacturer shall furnish the following information in four copies:

- a. manufacture's name and model numbers;
- b. comprehensive catalogs, technical data and descriptive literature of equipment offered;
- c. preliminary drawings and description of operations;
- d. list of spare parts required for two years operation with prices;
- e. list of all necessary operational and maintenance tests and required special tools for future maintenance.

### **DRAWINGS AND INSTRUCTIONS**

Manufacturer shall furnish the following:

- a. design fabrication of the vessel;
- b. system drawings complete with fire water pumps, piping layout, monitors control and supports, fire fighting installation details and electrical system wiring diagram;
- c. systems test procedures initial and periodic;
- d. operation and maintenance instructions and procedures.