



Ref. T4/4.03

hammering - see next page

**REVISED STANDARDS FOR THE DESIGN, TESTING AND
LOCATING OF DEVICES TO PREVENT THE PASSAGE OF
FLAME INTO CARGO TANKS IN TANKERS**

- 1 By resolution A.519(13) the Maritime Safety Committee was requested by the 1983 Assembly to finalize the Standards for devices to prevent the passage of flame into cargo tanks, the Committee was developing at the time, prior to the coming into force of the 1981 SOLAS amendments.
- 2 The Committee, at its forty-ninth session, (2 to 6 April 1984), adopted the standards so developed, which were attached to MSC/Circ.373.
- 3 The Committee agreed that the inert gas system was to be considered as equivalent to devices to prevent the passage of flame into cargo tanks only if vent outlets on ships fitted with inert gas systems were at least fitted with devices to prevent the passage of flame into cargo tanks, but that these devices need not comply with the test requirement for endurance burning. The Committee noted that, in the standards, emphasis was laid on compliance with test specifications rather than on construction. It was then understood that, in the case of a tanker fitted with an inert gas system, the provision of flashback would suffice and a well-designed and fitted flame screen could meet this criterion. In summary, if a flame screen met the standards, it would be accepted.
- 4 The Committee, at its fifty-fifth session, (11 to 22 April 1988), adopted amendments to the standards contained in MSC/Circ.373 and disseminated them as MSC/Circ.373/Rev.1.
- 5 The Committee, at its sixty-fourth session, (5 to 9 December 1994), recognizing the necessity to clarify some provisions in the revised standards, adopted further amendments thereto, which are incorporated in the test set out in the annex.
- 6 Member Governments are invited to give effect to the revised standards in conjunction with the application of regulation II-2/59 of the 1974 SOLAS Convention, as amended.

flow rates and, when the gas flow is interrupted, be capable of closing in such a way that this minimum velocity is maintained until the valve is fully closed.

2.3.6 In the case of high velocity vents, the possibility of inadvertent detrimental hammering* leading to damage and/or failure should be considered, with a view to eliminating it.

2.4 Flame screens

2.4.1 Flame screens should be:

- .1 designed in such a manner that they cannot be inserted improperly in the opening;
- .2 securely fitted in openings so that flames cannot circumvent the screen;
- .3 able to meet the requirements of these standards. For flame screens fitted at vacuum inlets through which vapours cannot be vented the test specified in 3.2.3 need not be complied with; and
- .4 be protected against mechanical damage.

2.5 Sizing, location and installation of devices

2.5.1 For determining the size of devices to avoid inadmissible pressure or vacuum in cargo tanks during loading or discharging, calculations of pressure losses should be carried out. The following parameters should be taken into account:

- .1 loading/discharge rates;
- .2 gas evolution;
- .3 pressure loss across devices, taking into account the resistance coefficient;
- .4 pressure loss in the vent piping system;
- .5 pressure at which the vent opens if a high velocity valve is used;
- .6 density of the saturated vapour/air mixture; and
- .7 to compensate for possible fouling of a flame arrester, 70% of its rated performance is to be used in the pressure drop calculation of the installation.

2.5.2 Devices should be located at the outlets to atmosphere unless tested and approved for in-line installation. Devices for in-line installation may not be fitted at the outlets to atmosphere unless they have also been tested and approved for that position.

*Hammering is rapid full stroke opening/closing, not intended by the manufacturer during normal operations.