

U.S. DEPARTMENT OF COMMERCE  
MARITIME ADMINISTRATION

DESIGN LETTER No. 3

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**Subject: Maritime Administration Subdivision Standards**

The Administration requires that all cargo ships built under Government subsidy or mortgage insurance programs be capable of surviving the final stage of flooding of any one compartment at any time during any voyage, generally in accordance with the following:

1. The assumed longitudinal extent of damage should be equal to 10 feet plus 3 per cent of the subdivision length of the vessel.
2. The transverse extent should be equal to one-fifth of the maximum beam measured inboard from the ship's side at the level of the deepest subdivision load line.
3. The vertical extent should be from top of the double bottom to the margin line.

Where any damage of a lesser extent than provided in 1, 2 and 3 above would result in a more severe condition regarding heel or loss of metacentric height, such damage should also be considered in the calculations.

4. Permeabilities should be as follows:

<u>Spaces</u>	<u>Permeability</u>
Assigned to cargo, coal or stores	60
Occupied by machinery	85
Intended for liquids	0 or 95*

\*Which ever results in the more severe requirement.

5. The final conditions of the ship after damage and after equalization measures have been taken should be as follows:
- (a) The residual metacentric height should be positive
  - (b) In the case of unsymmetrical flooding, the heel should be not greater than 15 degrees, nor should it immerse the margin line.

Compliance with the above is usually demonstrated by the preparation of 9 standard operating conditions, i.e., full cargo, half cargo and no cargo; each cargo condition with full, half and 10 per cent consumables. General cargo is assumed at the homogeneous center of the volume used in determining the bale capacity of the vessel.

Where the cargo deep tanks are convertible for dry or liquid cargo, these are assumed to be loaded with dry cargo and where deep tanks are provided exclusively for the carriage of liquid cargoes, the full cargo, half cargo, and no cargo conditions should include liquid cargoes in the same proportions.

The proportions and arrangements of the vessel should be chosen such that the stability characteristics, when loaded as above, can be maintained in accordance with the damaged stability requirements for one compartment flooding and it is required that this be obtained without the need of liquids in excess of one-half of the fuel oil, fresh water and clean ballast tankage of the ship, excluding the forward and after peak tanks.

In very exceptional cases where compliance with the above requirements would unduly penalize the design, and no other practical solution is available, the Administration will consider corrective measures such as cross flooding fittings, or operational restrictions for cargo and/or liquids, if it can be demonstrated that these remedies are practical from an operational viewpoint. In these exceptional cases the operational restrictions would be subject to specific approval by the Administration and the stability booklet must include pertinent instructions as required to maintain satisfactory operating stability.



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