(i) the crowding of all passengers towards one side;

(ii) the launching of all fully loaded davit-launched survival craft on one side;

(iii) due to wind pressure as calculated by the formula:

$$GZ \text{ (in metres)} = \frac{\text{heeling moment}}{\text{displacement}} + 0.04$$

However, in no case is this righting lever to be less than 0.10m.

(d) For the purpose of calculating the heeling moments in paragraph (c) the following assumptions shall be made:

(i) Moments due to crowding of passengers:

.1 4 persons per square metre;

.2 a mass of 75 kg for each passenger;

.3 passengers shall be distributed on available deck areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment.

(ii) Moments due to launching of all fully loaded davit-launched survival craft on one side:

.1 all lifeboats and rescue boats fitted on the side to which the ship was heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;

.2 for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;

.3 a fully loaded davit-launched liferaft attached to each davit on the side to which the ship was heeled after having sustained damage shall be assumed to be swung out ready for lowering;

.4 persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;

.5 life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position.

(iii) Moments due to wind pressure:

.1 a wind pressure of 120 N/m² to be applied;

.2 the area applicable shall be the projected lateral areas of the ship above the waterline corresponding to the intact condition;

.3 the moment arm shall be the vertical distance from a point at one half of the mean draught corresponding to the intact condition to the centre of gravity of the lateral area.

(8) In intermediate stages of flooding, the maximum righting lever shall be at least 0.05m and the range of positive righting levers shall be at least 7°. In all cases, only one breach in the hull and only one free surface need be assumed.

(9) For the purpose of making damage stability calculations the volume and surface permeabilities shall be in general as follows:

Spaces	Permeability
Appropriated to cargo, coal or stores	60
Occupied by accommodation	95
Occupied by machinery	85
Intended for liquids	0 or 95*

* Whichever results in the more severe requirements

Higher surface permeabilities are to be assumed in respect of spaces which, in the vicinity of the damage waterplane, contain no substantial quantity of accommodation or machinery and spaces which are not generally occupied by any substantial quantity of cargo or stores.

(10) Assumed extent of damage shall be as follows:

(a) longitudinal extent: 3.0m plus 3 per cent of the length of

the ship, or 11.0m whichever is the less. Where the required factor of subdivision is .33 or less the assumed longitudinal extent of damage shall be increased as necessary so as to include any two consecutive main transverse watertight bulkheads;

(b) transverse extent (measured inboard from the ship's side, at right angles to the centreline at the level of the deepest subdivision load line): a distance of one fifth of the breadth of the ship, and

(c) vertical extent: from the base line upwards without limit;

(d) if any damage of lesser extent than that indicated in paragraphs (a), (b) and (c) above would result in a more severe condition regarding heel or loss of metacentric height, such damage shall be assumed in the calculations.

(11) Unsymmetrical flooding is to be kept to a minimum consistent with efficient arrangements. Where it is necessary to correct large angles of heel, the means adopted shall, where practicable, be self-acting, but in any case where controls to cross-flooding fittings are provided they shall be operable from above the bulkhead deck. These fittings together with their controls shall be acceptable to the Chief Surveyor. The maximum angle of heel after flooding but before equalisation shall not exceed 15°. Where cross-flooding fittings are required the time for equalisation shall not exceed 15 minutes. Suitable information concerning the use of cross-flooding fittings shall be supplied to the master of the ship.

(12) The final conditions of the ship after damage and, in the case of unsymmetrical flooding, after equalisation measures have been taken shall be as follows:

(a) in the case of symmetrical flooding there shall be a positive residual metacentric height of at least 50mm as calculated by the constant displacement method;

(b) in the case of unsymmetrical flooding, the angle of heel for one-compartment flooding shall not exceed 7°. For the simultaneous flooding of two or more adjacent compartments, a heel of 12° may be permitted by the Chief Surveyor.

(c) in no case shall the margin line be submerged in the final stage of flooding. If it is considered that the margin line may become submerged during an intermediate stage of flooding, the Chief Surveyor may required such investigations and arrangements as he considers necessary for the safety of the ship.

(13) The master of the ship shall be supplied with the data necessary to maintain sufficient intact stability under service conditions to enable the ship to withstand the critical damage. In the case of ships requiring cross-flooding the master of the ship shall be informed of the conditions of stability on which the calculations of heel are based and be warned that excessive heeling might result should the ship sustain damage when in a less favourable condition.

(14) The data referred to in sub-clause (13) of this clause, to enable the master to maintain sufficient intact stability, shall include information which indicates the maximum permissible height of the ship's centre of gravity above keel (KG), or alternatively the minimum permissible metacentric height (GM) for a range of draughts or displacements sufficient to include all service conditions. The information shall show the influence of various trims taking into account the operational limits.

(15) Each ship shall have scales of draughts marked clearly at the bow and stern. In the case where the draught marks are not located where they are easily readable, or operational constraints for a particular trade make it difficult to read the draft marks, then the ship shall also be fitted with a reliable draught indicating system by which the bow and stern draughts can be determined. Every ro-ro passenger ship of Class I or II shall be provided with a reliable automatic draught gauge system.

(16) No relaxation from the requirements for damage stability