



भारत सरकार / GOVERNMENT OF INDIA
पोत परिवहन मंत्रालय / MINISTRY OF SHIPPING

नौवहन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF SHIPPING, MUMBAI

फा. संख्या:- सीएस/सीओएनटी(8)(1)/2018

दिनांक: 12.09.2019

वर्ष 2019 नौमनि आदेश संख्या- 04

विषय :- वाणिज्य पोत परिवहन अधिनियम 1958, जलयानों द्वारा पशुओं कि दुलाई-संबंधी

जबकि यथा संशोधित, वाणिज्य पोत परिवहन, 1958 का उद्देश्य है कि नौवहन का निरंतर विकास किया जाए एवं यह सुनिश्चित किया जाए कि भारतीय समुद्री व्यापार सुरक्षाप्रद और कुशलता पूर्ण हो तथा यह राष्ट्रीय हितों के सर्वथा अनुरूप हो।

2. जबकि नौवहन महानिदेशालय, पोत परिवहन मंत्रालय भारत सरकार यथा संशोधित, वाणिज्य पोत परिवहन अधिनियम 1958 को लागू करने के लिए देश में समुद्री प्रशासन के रूप में पदनामित है तथा सुविधा प्रदाता के रूप में और भारत में वाणिज्य पोत परिवहन के विनामक के रूप में कार्यरत है।

3. जबकि विभिन्न श्रेणियों के जलयानों में कार्गो के रूप में पशुओं को ले जाया जा सकता है।

4. जबकि जिन जलयानों का प्रयोग पशुओं को ले जाने के लिए किया जाता है उनके लिए आवश्यक है कि वे निश्चित मानकों का पालन करें ताकि इन्हें उचित रीति से समुद्र मार्ग से ले जाया जाए साथ ही ये जलयान सुरक्षाप्रद परिवहन हेतु समुद्री यात्रा के लिए पशुओं की अपेक्षाओं पर खरें उतरते हैं (आहार, जल, पशुओं के बैठने के लिए लकड़ी का बुरादा, जल निकासी, दवा, वातायान आदि)।

5. जबकि सभी श्रेणियों के पशुवाहक आवश्यक रूप से न्यूनतम सुविधा अपेक्षाओं पर खरे उतरते हैं। जलयान भारत के समुद्र त्तर पर निर्यात, आयात या वहां से लाए ले जाए जाने के उद्देश्य से पशुओं के परिवहन के लिए सुरक्षापद एवं अनुकूलता पूर्ण है।

6. जबकि प्रशासन के लिए अति महत्वपूर्ण बात यह है कि पशुओं की दशा ठीक रहने के साथ साथ समुद्र में जलयान सुरक्षित रहें।

बीटा बिल्डिंग, 9वीं मंजिल, आई थिंक टेक्नो कैम्पस, कांजूर गाँव रोड, कांजूरमार्ग (पूर्व) मुंबई-400042

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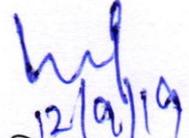
7. जबकि 7 जुलाई, 2017 को अंगीकृत अंतरराष्ट्रीय समुद्रीय संगठन के संकल्प एमईपीसी 295 (71) के परिच्छेद 2.12.1 में इस बात पर बता दिया गया है कि कार्गो के तौर पर लादे गए पशुओं का प्रबंधन, थलचर पशु संहिता 2010 के संबंध में विश्व संगठन द्वारा निरूपित समुद्री रास्ते से पशुओं के परिवहन हेतु मार्गदर्शी सिद्धान्त नामक पशुओं के परिवहन हेतु अंतरराष्ट्रीय मानकों के अनुसार कार्गो के रूप में लदाई के लिए लाए गए पशुओं का प्रबंधन होना चाहिए ।

8. जबकि उक्त संहिता के अध्याय 7.2 में विशिष्ट रूप से समुद्र मार्ग द्वारा ले जाए जाने वाले पशुओं के अलावा अन्य बातों के साथ साथ जलयान तथा कंटेनर डिज़ाइन एवं अनुरक्षण के बारे में बताया गया है ।

9. इसलिए अब इस आदेश के अनुलग्नक 1 अनुसार मार्गदर्शी सिद्धांतों का पालन उन सभी जलयानों द्वारा किया जाए जो की पाल जलयानों सहित पशुओं के परिवहन में लगे हैं ।

10. पूर्वान्त उपाय पशुओं की सुरक्षाप्रद, निरापद, पर्यावरणीय रूप से उचित और निर्बाध दुलाई एवं जनहित को सुनिश्चित करने के लिए आरंभ किए गए ।

11. यह आदेश तत्काल प्रभाव से लागू होगा ।


12/07/19

(अमिताभ कुमार)

नौवहन महानिदेशक

एवं अपर सचिव, भारत सरकार



भारत सरकार / GOVERNMENT OF INDIA
पोत परिवहन मंत्रालय / MINISTRY OF SHIPPING

नौवहन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF SHIPPING, MUMBAI

F. No. CS/Cont(8)(1)/2018

Dated: 12.09.2019

DGS Order No. 04 of 2019

Subject: Carriage of Livestock by the vessels registered under The Merchant Shipping Act. 1958...reg

Whereas the object of the Merchant Shipping Act, 1958, as amended is to foster the development of shipping and ensure the safe & efficient Indian mercantile marine in a manner best suited to serve the national interests;

2. Whereas the Directorate General of Shipping [DGS], Ministry of Shipping, Govt. of India is the designated maritime administration of the country to administer the Merchant Shipping Act, 1958, as amended, as facilitator and regulator of the merchant shipping in India;

3. Whereas livestock may be transported as part of the cargo on various classes of vessels.

4. Whereas the vessels which may be used for transportation of livestock need to follow certain standards, so as to make them seaworthy as well as meet the requirements of livestock for the voyage (food, water, sawdust bedding, drainage, medication, ventilation, etc.) for their safe transportation.

5. Whereas all classes of livestock carriers must meet the minimum facilities requirements to make these vessels fit for safe & efficient environment friendly transportation of livestock for the purpose of export, import or movement on the coast of India.

Anilatah Singh
2/9/19

6. Whereas the safety of vessel at sea including the well-being of the livestock is the paramount consideration for the administration.

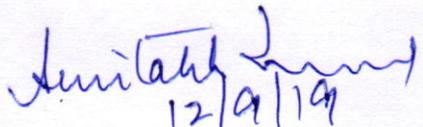
7. Whereas para 2.12.1 of International Maritime Organisation's Resolution MEPC.295 (71) adopted on 7th July, 2017 stress that animals presented for loading as cargo should be managed in accordance with international standards for the transport of animals at sea i.e. "Guidelines for the Transport of Animals by Sea" formulated by World Organisation for Animal Health (OIE) as part of the Terrestrial Animal Health Code 2010.

8. Whereas Chapter 7.2 of the said Code specifically deals with the recommendations on Transport of Animal by Sea which inter-alia include Vessel and Container Design and Maintenance.

9. Now therefore, the Guidelines as per Annexure-I to this order shall be complied by all kind of vessels engaged in transportation of livestock including sailing vessels.

10. The foregoing measures have been put in place to ensure safe, secure, environmentally sound and hindrance free carriage of livestock, and in public interest.

11. This order shall come into force with immediate effect.


12/9/19
(Amitabh Kumar)

Director General of Shipping
& Additional Secretary to the GoI.

To;

1. All the stakeholders through DGS website
2. Central Board of Indirect Taxes and Customs, North Block, New Delhi.
3. All Mercantile Marine Departments
4. All Recognized Organizations

5. All Regional Officer (Sails)
6. Indian Ports Association
7. Indian National Ship-owners Association [INSA], Mumbai.
8. ICC Shipping Association [ICCSA], Mumbai.
9. All State Maritime Boards/ Secretary to the Government dealing with the ports/ Coastal States.
10. Federation of All India Sailing Vessels Associations
11. Indian Sailing Vessels Association, Custom Road, Jam Salaya, Dist. DevbhoomiDwarka, Gujarat - 361 310.

Copy for kind information to:

Secretary to the Government of India, Ministry of Shipping, Transport Bhawan, 1, Parliament Street, New Delhi - 110 001. [Attn.: Shri Satinder Pal Singh, Joint Secretary]

Amilata Singh
12/9/19

Guidelines for Transportation of Livestock by Sea

Part 1

1. These Guidelines may be called as the Guidelines for Transportation of Livestock by Sea.

2. In these Guidelines—

“Director General” means the Director General of Shipping appointed under Section 7 of Merchant Shipping Act, 1958.

“master” includes tindal or any person having charge or command of a vessel, other than a pilot;

“owner” in relation to a vessel, includes the operator or manager of the vessel;

“shipper” includes a person who is in charge of loading livestock onto a vessel or the handling of livestock in preparation for loading;

“vessel” means any vessel, used or intended to be used to carry livestock by sea.

3. (1) Application.- These Guidelines shall apply to the loading and carriage by sea of livestock being exported or imported or on the coast of India from/and to an Indian port on a vessel,

Part 2

Approval and conditions for carriage of livestock

Approval of a livestock vessel

4. (1) A person shall not carry livestock by sea except in accordance with an approval granted for the purpose of these Guidelines (“livestock vessel approval”).

(2) The Director General may grant a livestock vessel approval.

(3) The approval granted under these guidelines shall be subject to such conditions as may be specified.

(4) The approval at any time if circumstances so require, refuse, revoke or modify the approval granted under these Guidelines.

Provided that no order for refusal, revocation or modification shall be passed unless the applicant is given the opportunity to be heard.

(5) An application for a livestock vessel approval shall be in a form and contain any information that the Director General may require, including a livestock vessel plan.

(6) To be approved for the carriage of livestock —

(a) a vessel must be registered under the Merchant Shipping Act 1958,

(b) in the case of a foreign flag vessel, the vessel shall be classified as a 'Livestock Carrier' by one of the Recognized Organizations of the Government of India and meet the requirements specified in these Guidelines.

(7) Without prejudice to the generality of above provision, the Director General may refuse an application or revoke a livestock vessel approval if he is of the opinion that—

(a) the owner of a livestock vessel has committed an offence, relating to animal health or welfare or the environment,

(b) the owner of a livestock vessel has failed to comply with a condition of a livestock vessel approval,

(c) in relation to an application, information required has not been furnished or information that is false or misleading in a material respect has been furnished,

(d) the vessel to which the application or livestock vessel approval relates is not, or has ceased to be, a fit and proper vessel to be approved,

(e) the applicant or owner of the livestock vessel is not a fit and proper person to be approved,

(f) the owner of a livestock vessel has ceased to carry out the activity to which approval relates,

(g) it is necessary for the protection of public health, animal health or welfare or the environment.

(8) A livestock vessel approval is valid for a period that the Director General may determine.

Certificate of approval

5. (1) If the Director General grants a livestock vessel approval, he shall issue a certificate to the owner of the livestock vessel ("certificate of approval") in a format, containing the information in paragraph (2) and such other information (if any), that the Director General determines.

(2) A certificate of approval shall contain—

(a) the name of the owner of the livestock vessel,

- (b) the unique approval number assigned to that vessel,
- (c) the conditions to which the livestock vessel approval is subject,
- (d) the period of validity of the livestock vessel approval, which shall not exceed 5 years, and
- (e) the name and address of the issuing authority.

(3) A certificate of approval shall be retained on board the vessel to which it relates and made available for inspection on request by an authorized officer.

(4) The holder of the certificate of approval shall cause it to be displayed prominently on the vessel to which the approval relates.

(5) If a livestock vessel approval is revoked, the holder of the certificate of approval shall surrender it to the Director General or an authorized officer.

Inspection of vessels

6. (1) The owner of a vessel shall make the vessel available for inspection at a time and place determined by the Director General, on a request being made in that behalf.

(2) The owner of a vessel shall bear the cost of an inspection for the purposes of these Guidelines, in accordance with Sr. no. 33 of Annexure to D G Shipping circular no. 13 of 2010 dated 06 Sep, 2010 (F. No. F&A/12(3)/97-Part III).

List of vessel approvals

7. The Director General shall maintain and publish, in a manner that he or she considers appropriate a list of livestock vessel approvals.

Records

8. A person who is required to maintain a record under the Guidelines or as a condition of a livestock vessel approval shall maintain the record for five years and make it available on request to an authorized officer.

Documents to be retained on vessel

9. The master of an approved vessel shall ensure that a copy of the relevant livestock vessel plan and any supporting drawings and documents are retained on board and made available for inspection if so requested by an authorized officer.

Part 3

Weather conditions

Adverse weather

10. (1) Subject to paragraph (2), the master of a vessel shall have in his or her possession, immediately prior to the intended time of sailing—

(a) the current 96 hour weather forecast from the Indian Meteorological Service covering both wind and sea conditions for those sea areas in which the vessel is intended to travel during the first 96 hours of the voyage, and

(b) sufficient other information on the recent and prevailing wind and sea conditions for the route of the intended voyage as would enable him or her to assess the sea conditions on the route.

(2) The master of a vessel shall make available to an authorised officer a copy of the forecast and information referred to in paragraph (1).

(3) The master of a vessel shall ensure that the vessel does not depart an Indian port carrying livestock if—

(a) the forecast or information referred to in paragraph (1) predicts unfavorable sea and wind conditions for any sea area in which the vessel is intended to travel during the first 96 hours of the intended voyage during a period in which the vessel would be in that sea area,

(b) the forecast referred to in paragraph (1) predicts wind of force 8 or greater on the Beaufort scale for any sea area in which the vessel is intended to travel during a period in which the vessel will be in that sea area, or

(c) in the case of a vessel of less than 90 meters in length overall or having a roll period of less than 15 seconds, the forecast referred to in paragraph (1) predicts wind of force 6 or greater on the Beaufort scale for any sea area in which the vessel is intended to travel during a period in which the vessel would be in that sea area.

Voyage plan

11. (1) A person shall not load or cause or permit another person to load livestock on a vessel unless a voyage plan in respect of the intended voyage has been submitted to and approved by the Director General..

(2) The voyage plan referred to in paragraph (1) shall show the intended route from the port of departure to the port of destination and shall include a list of ports or harbours of refuge capable of accommodating the vessel during its intended voyage and the distances between those ports or harbours.

(3) The master of a vessel shall identify each port at which it is intended to call during the voyage.

(4) The master of a vessel shall ensure that sufficient up-to-date charts and appropriate nautical publications are carried on board to ensure safe access to the ports and harbours referred to in paragraph (2) and shall make such charts and publications available for inspection, if so requested by an authorised officer.

(5) Where, while in the course of a voyage, the master of a vessel receives a forecast or indication of adverse weather conditions, which, in his or her opinion, would be likely to cause injury, suffering, or loss of life to the livestock on board, he or she shall take all necessary action to prevent such injury, suffering or loss of life, including taking shelter, until conditions become favourable.

Part 4

Duties of master and loading and care of livestock

Inspection before loading

12. (1) The owner of a vessel shall give 5 working days advance notice in writing to the Director General where it is proposed to load the vessel with livestock in India.

(2) The advance notice referred to in paragraph (1) shall specify—

- (a) the name of the vessel,
- (b) the port, berth and period for vessel inspection,
- (c) the type, number and estimated average weight of the livestock which it is intended to load,
- (d) each assembly centre where animals will be assembled prior to transport, and
- (e) the intended port of destination.

(3) Where any change of crew members has occurred during the period of approval of a vessel the master shall present to an authorised officer details of the new crew members and their experience with livestock.

(4) The master of a vessel shall, if so requested by an authorised officer, make available for inspection the stability calculations specified in Schedule 2.

(5) Where, during the course of an inspection, or otherwise, an authorised officer is of the opinion that an approved vessel does not comply with the details outlined in the livestock vessel plan relating to the vessel, he or she may direct by a notice in writing served on the owner or master of the vessel that—

- (a) the loading of livestock shall not commence or continue, or
- (b) livestock shall be carried only in parts of the vessel as may be specified in the notice, until such time as he or she is satisfied that the Guidelines and the livestock vessel plan are being complied with.

(6) A notice under paragraph (5) remains in force until varied or withdrawn by a further notice.

(7) An authorised officer may direct the master of a vessel to alter the number of livestock to be contained in any part of the vessel or to provide additional fittings for the intended voyage, in which case the master shall ensure that the vessel does not leave an Indian port carrying livestock until the direction is complied with

Loading requirements

13. (1) A shipper and the master of the vessel shall ensure that the handling of livestock in the port of loading and the loading of livestock onto a vessel is undertaken by competent persons and that all reasonable care is taken during such handling and loading to avoid accidents and injuries to livestock.

(2) A shipper and the master of the vessel shall ensure that records are kept of the progressive totals of the weight and number of livestock loaded on a vessel and shall make available such records for examination, if so requested, by an authorised officer.

(3) Where, in the opinion of an authorised officer, the feed or water supplied to, or loaded on, the vessel is not of suitable quality or sufficient quantity for the intended voyage, the officer may direct by a notice in writing to the owner or master of the vessel that—

(a) loading of livestock shall not commence or continue, or

(b) the vessel shall not leave the port carrying livestock, until the officer is satisfied that a sufficient quantity of feed and water of suitable quality has been supplied to the vessel.

(4) The master of a vessel shall ensure that the vessel does not leave the port carrying livestock unless—

(a) the vessel complies with Schedule 1, and

(b) he or she has presented to an authorised officer the stability calculations for the vessel for the intended voyage in accordance with Schedule 2.

Penning of livestock

14. (1) The master of a vessel shall ensure that all livestock on board the vessel are contained in pens and that cattle are not carried in more than one tier on any one deck.

(2) The master of a vessel shall ensure that the maximum number of livestock that is carried in any pen on the vessel shall be the number obtained by dividing the pen area available in square metres, by the minimum permissible floor area per head, in accordance with para 24.

(3) Where competitive, combative or otherwise undesirable behaviour is likely to arise among the livestock, the master shall ensure that they are segregated and grouped, according to size, sex, age, breed or other characteristic, so as to avoid such behaviour.

(4) Where livestock are carried individually, the construction of the stalls, boxes or other containers shall provide an area for each animal which complies with para 24.

Care of livestock on board

15. (1) The master of a vessel shall ensure that there is a sufficient number of crew members who are competent in the care and management of livestock on board and are capable of providing satisfactory tending, feeding and watering of livestock at all times during the voyage.

(2) The master of a vessel shall ensure that the crew carry out their duties with respect to the tending and caring of livestock while on board and that they—

(a) distribute the proper daily supply of feed and water to the animals,

(b) ensure that a satisfactory level of hygiene is maintained in each pen,

(c) observe the livestock and report any case of a distressed, injured or diseased animal to the master,

(d) remove and dispose of dead animals,

(e) regularly monitor the temperature in those parts of the vessel in which livestock are kept, and

(f) report any deterioration in the ventilation system or fittings which have been provided for the care of animals.

(3) The master of a vessel shall ensure that an adequate method for restraining and treating distressed animals is provided on board.

(4) The master of a vessel shall ensure that provision is made for isolating ill or injured animals during the voyage and that first-aid treatment is given to such animals, where necessary.

Avoiding obstructions on board

16. The master of a vessel shall ensure that livestock are not loaded or carried in any part of a vessel where livestock, fittings, equipment or carrying arrangements would interfere with or obstruct—

(a) access to any accommodation space, working space necessary for the safe running of the vessel, or the means of egress from any hold or under deck space,

(b) a hatchway, unless the hatchway is protected against consequent damage and the hatchway covers are secured against movement,

(c) life-saving or fire-fighting appliances,

(d) the provisions made for the sounding of tanks or bilges,

- (e) the operation of closing appliances provided on the vessel,
- (f) the operation of freeing ports provided on the vessel,
- (g) the lighting and ventilation systems of the vessel, or
- (h) the proper navigation of the vessel.

Provision and stowage of feed

17. (1) The master of a vessel carrying livestock shall ensure that there is sufficient feed of suitable quality available on board—

(a) for the expected duration of the voyage; and

(b) to provide a reserve of a further 25 per cent or 3 days requirements, whichever is the lesser.

(2) Where the master of a vessel has been provided with feed which, in their opinion, is not of suitable quality or sufficient quantity for the duration of the voyage, they shall inform an authorised officer.

(3) The master of a vessel shall ensure that feed stowed on board is maintained in good condition and that—

(a) it is kept in a dry state and protected from the weather and the sea,

(b) feed, in the form of pelletised food, is loaded and stored in such a manner as to ensure that the moisture content of pellets is not affected, and

(c) the stowage of feed does not interfere with ventilation, lighting, drainage systems, passageways or the proper navigation of the vessel.

(4) The master of a vessel shall ensure that the minimum daily quantity of feed fed to each head of livestock is—

(a) 2 per cent of live body weight of hay of good quality, or

(b) 1.6 per cent of live body weight of feed in pelleted or other concentrated form provided the feed contains a minimum of 10 per cent fibre and has an equivalent nutritional value to hay of the same weight.

(5) The master of a vessel shall ensure that livestock on board the vessel are fed twice daily.

(6) Feed shall not be placed on the floor of a pen containing livestock.

Provision and maintenance of water

18. (1) The master of a vessel carrying livestock shall ensure that there is sufficient potable water available on board or the capability to produce sufficient potable water on board to provide—

(a) at least 45 litres of water per day to each head of cattle and at least 4 litres of water per day to each head of sheep for the expected duration of the voyage to its destination or to an intermediate port at which sufficient water can be taken on board, and

(b) a reserve of a further 25 per cent of the requirement for the voyage to its destination or intermediate port, or 3 days requirement, whichever is the lesser.

(2) The master of a vessel shall ensure that each part of the vessel has a wholesome and uncontaminated water service and that each animal on board has access to wholesome and uncontaminated water at all times.

(3) The master of a vessel shall ensure that—

(a) tanks used for the stowage of drinking water for livestock are maintained sufficiently to ensure that such water does not become contaminated, and

(b) equipment, including pumping equipment, used for the provision of drinking water to livestock is maintained in proper working order.

(4) The master of a vessel shall supply, if required by the Director General, a report, from a laboratory acceptable to the Director General, showing the physical, chemical and bacteriological analysis of the water in any tank or tanks on the vessel.

Patrols

19. (1) The master of a vessel shall operate patrols to ensure the safety of the vessel and welfare of the livestock throughout the period during which livestock are on board.

(2) The scope and frequency of the patrols shall be determined by the master of a vessel, having regard, in particular, to the use of automatic surveillance devices and alarms.

(3) The master of a vessel shall ensure that the requirements of the Regulation are included in the vessel's International Safety Management System, as applicable, and fully complied with throughout the period during which livestock are on board.

Master's report

20. (1) In respect of each voyage, the master of a vessel shall submit a report to the Director General accompanied by a log abstract for such voyage which shall include a daily record of the vessel's position, course and speed, and wind and sea conditions.

(2) The report referred to in paragraph (1) shall be furnished to the Director General in a form and contain the information that the Director General determines.

(3) Subject to paragraph (4), the report referred to in paragraph (1) shall be submitted to the Director General, after the completion of discharge of the livestock at destination—

(a)(i) within seven days thereof, or

(ii) on a date prior to the return of the vessel to an Indian port, whichever is the sooner, or

(b) at any other time if requested by the Director General.

(4) Notwithstanding paragraph (3), where, mortalities have occurred during the voyage or at discharge, the report referred to in paragraph (1) shall be furnished to the Director General, immediately after completion of discharge of the livestock at destination, by the most expedient means of communication available, providing details of the number of livestock that died or were killed and the factors that led to their deaths.

(5) Where, in the opinion of the Director General, the report contains an unacceptable number of injuries or mortalities—

(a) an owner shall submit a copy of the deck log for the relevant voyage, if so requested by the Director General, and

(b) the Director General may suspend or revoke the certificate of approval of the vessel for the carriage of livestock in accordance with para 4 until an investigation has been carried out.

Disposal of dead livestock at sea

21. (1) The master of a vessel shall ensure that any animal carcass is discharged as far from the nearest land as possible, and according to the guidelines for the implementation of MARPOL ANNEX V.

(2) The master of a vessel shall ensure that any animal carcass is not disposed of at sea unless the carcass has been slit to the extent that both the thoracic and abdominal cavities are opened.

(3) The master of a vessel shall ensure the removal of all identity tags from any animal carcass and return the tags to the agent.

Stowage of tools and equipment

22. The master of a vessel shall ensure that tools used for feeding and other equipment are stowed so as not to obstruct passageways.

Storage of drugs and medicines

23. The master of a vessel shall maintain the safe custody of drugs and medicines and ensure that they are kept under lock and key.

Part 5

Miscellaneous and final

Livestock loading densities

24. (1) For bovine animals the minimum space allowances set out in the table to this paragraph apply to a vessel carrying animals from an Indian port.

Table

Live weight in kilogrammes	Square Metres per animal in pens
200	0.81
300	1.0575
400	1.305
500	1.5525
600	1.80
700 or more	2.70

(2) Notwithstanding paragraph (1), in the case of a voyage intended to be of a duration exceeding 12 days, the minimum space to be allowed for livestock shall be in accordance with the table to this paragraph.

Table

Live weight in kilogrammes	Square Metres per animal in pens
200	0.900
300	1.175
400	1.450
500	1.725
600	2.000
700 or more	3.000

(3) Notwithstanding paragraph (1), in the case of a voyage intended to transport entire male animals of 700kgs or more, the stocking rates of paragraph (2) apply to those classes of animals.

(4) For bovine animals the minimum space allowances set out in the table to this paragraph apply to a vessel carrying animals from an Indian port.

Table

Live weight in kilogrammes	Square Metres per animal in pens
20 or less	0.240
30	0.265
40	0.290
50	0.315
60	0.360
70	0.429
80	0.502
90	0.575

(a) For horned rams an additional 10% pen space must be allocated.

(b) For sheep carrying more than 25 mm of wool, an additional 10% pen space must be allocated.

(5) For weights between those shown in the tables, the minimum pen area per head shall be calculated by linear interpolation using a maximum of four figures after the decimal point.

Delegation by Director General

25. The Director General may, by order, direct that any power, authority or jurisdiction exercisable by him under these guidelines shall also be exercised by such other officer as he may specify in this behalf.

Provided that the officers so specified shall exercise power, authority or jurisdiction subject to such conditions as may be imposed by the Director General.

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Schedule 1

Specifications and equipment for vessels

Chapter 1

Stability requirements

1. The stability requirements of a vessel to be met throughout a voyage, taking into account the effects of shift of livestock and feed and, if the vessel has a pen structure on or above the uppermost continuous deck, the effect of wind shall be as follows-

(a) the area under the righting lever curve shall be not less than 3.15 metre-degrees (0.055 metre-radians) up to 30 degrees angle of heel and not less than 5.16 metre-degrees (0.09 metre-radians) up to 40 degrees angle of heel, or the angle of flooding if this angle is less than 40 degrees,

(b) the area under the righting lever curve between the angles of heel of 30 degrees and 40 degrees, or between 30 degrees and the angle of flooding if this angle is less than 40 degrees, shall be not less than 1.72 metre-degrees (0.03 metre-radians),

(c) the righting lever shall be not less than 0.20 metre at an angle of heel equal to, or greater than 30 degrees,

(d) the maximum righting lever shall occur at an angle of heel not less than 25 degrees,

(e) the initial metacentric height shall be not less than 0.15 metre,

(f) the area under the righting lever curve up to 40 degrees or the angle of flooding, whichever is less, in excess of the area under the heeling lever curve to the same limiting angle, shall be not less than 1.03 metre-degrees (0.018 metre-radians) plus 20 per cent of the area of the righting lever curve to the same limiting angle, and

(g) the angle of heel due to wind shall be not more than 10 degrees.

2. For the purposes of paragraph 1—

(a) the heeling curve is that curve taking into account the effects of shift of livestock and feed and, if acceptable, the effect of wind, and

(b) the angle of flooding is that angle of heel at which openings in the hull, superstructures or deckhouses, that cannot be closed watertight, immerse. Small openings through which progressive flooding cannot take place may be ignored in determining the angle of flooding.

3. Where the vessel is carrying other cargo in addition to livestock, the stability requirements for the carriage of such cargo shall be taken into account in addition to the criteria specified in paragraph 1.

Chapter 2

Fittings — general requirements

4. Vessels shall have fittings which are sufficiently durable to protect livestock from injury and exposure to weather and sea.

5. All fittings, fixtures and objects, including electrical supply cables and electrical fittings in a vessel that are likely to come into contact with livestock shall be so manufactured, assembled or positioned as to prevent injury to livestock.

6. All constructions and fitments in the livestock decks and handling areas shall be of metal or other impermeable material such as may be readily cleansed and disinfected; timber and timber products shall not be considered suitable materials except where such timber or timber products are—

(a) so treated that their surface is impermeable, and

(b) so situated that they are unlikely to be damaged either by livestock or any other cause.

7. (a) Where the casing, tanktop or bulkhead of an engine room, boiler room or heated fuel tank, forms a boundary or part of a boundary of a space in which livestock are to be carried, that casing, tanktop or bulkhead shall be effectively insulated to minimise the conduction of heat.

(b) Where any part of the uppermost continuous deck forming the boundary of an underlying livestock space is not overshadowed by an overlying structure such part shall be treated or insulated to minimise the absorption and conduction of solar heat.

8. Where a hatchway is located in a pen or stall used to hold livestock, it shall be protected against consequent damage and the hatchway covers shall be secured against movement.

Chapter 3

Design of pens, stalls and passageways for cattle

9. Subject to paragraph 10, the construction of pens and stalls for cattle and of adjacent passageways shall comply with the specifications shown in the table to this paragraph.

Detail of design	Table Dimensions
Maximum distance between rails aligned fore and aft	4.5 metres
Minimum distance between rails aligned fore and aft	2.1 metres
Minimum distance between rails aligned athwartships	2.3 metres
Maximum clear floor area within pen	21.0 Square metres
Height of the bottom edge of the lowest rail of a partition above the pen floor where there are no coaming plates	≤ 0.05 metres <u>or</u> ≥ 0.25 metres and ≤ 0.35 metres
Height of the bottom edge of the lowest rail of a partition above the top edge of a coaming plate	≤ 0.05 metres <u>or</u> ≥ 0.20 metres
Minimum clear height within pen	2.0 metres
Minimum clear height within deck outside pens	1.8 metres
Minimum width of adjacent passageway, measured clear between rails, when pens are on both sides of the passageway and livestock are loaded and discharged through the pens	0.9 metres
Minimum width of adjacent passageway, measured clear of any fixed structure, fittings, receptacles or obstructions (eg pillars, feed chutes, feed or water troughs), when pens are on both sides of the passageway and livestock are loaded and discharged through the pens	0.75 metres
Minimum width of adjacent passageway, measured clear of any	0.9 metres

fixed obstructions, when pens are on both sides of the passageway and livestock are loaded and discharged through the passageway

Minimum width of adjacent passageway, measured clear from rails, when pens are on one side only of passageway and livestock are not loaded through that passageway 0.75 metres

10. The height of the rails of a pen may be varied, with the approval of the Director General, to the extent of 75 millimetres either way from those specified above and to take into account coaming plates.

11. An identifying number shall be displayed on each pen and shall correspond to individual pen numbers on the drawings submitted with the livestock vessel plan.

12. Without prejudice to paragraph 9, where the minimum clear height within pens is between 1.8 metres and 2.0 metres, a vessel may be approved for carriage of cattle, subject to all other matters being in accordance with the requirements of these Guidelines. In such cases the authorised officer in charge at the time of loading will determine the stocking density, weight, size or type of cattle to be carried in such pens, and his or her determination in this regard will be final, but in any event individual animals that exceed 350 kilogrammes in weight cannot be carried in such pens. The maximum area of each deck with a minimum clear height of between 1.8 and 2.0 metres is 25% of the total deck area.

13. Without prejudice to paragraph 9, there shall be a maximum clear space of 0.30 metres (300 millimetres) between the rails of a pen or between a rail and the top of a coaming plate, or between a rail and the overhead structure of the vessel except that a rail need not be placed at a height of more than 1.40 metres.

14. Where a water or food receptacle is fitted to the outside of a pen or where feed is distributed on the floor outside a pen, an aperture for the purposes of watering or feeding the livestock shall be provided, the top edge of the lowest rail of which shall not be more than 0.6 metres (600 millimetres) above the deck floor.

15. The clear floor area within a pen shall be the area of the floor of the pen exclusive of any receptacle or other object or structure occupying any part of the area of the pen.

16. The sides of pens, passageways, ramps and any areas where livestock are kept or through which they pass shall be vertical. However, where a sloping portion of the vessel forms the boundary of any such pen, passageway, ramp or area and the angle of declination of that boundary exceeds 14 degrees from the vertical then that sloping portion shall be railed off from the livestock by a vertical barrier.

Chapter 4

Strength of pen, stalls and passageways for cattle

17. Without prejudice to paragraph 21, rails and stanchions forming a fore and aft boundary of a cattle pen or stall shall be capable of withstanding a load per metre length by the application of the formula to this paragraph, uniformly distributed up to the height of the top of the uppermost rail, the centre of which is at a height of not more than 1.40 metres above the pen floor.

Formula

$F = 3336 B (0.574 + 0.0252 Z)$ Newton's per metre length where:

F = load per metre length of boundary,

B = maximum breadth of pen in metres, and

Z = the vertical distance from a point 0.75 metres above the pen floor to the vessel's waterline corresponding to the anticipated lightest load, in metres.

18. Rails and stanchions forming a boundary of a cattle pen or stall, other than a fore and aft boundary referred to in paragraph 17, shall be, where possible, of the same method of construction and of the same scantlings as determined by the application of Formula 1 above, for the fore and aft boundaries.

19. Without prejudice to paragraph 21, the floor and floor supports of a cattle pen or stall shall be capable of withstanding a load determined by the application of the formula to this paragraph, uniformly distributed over any two-thirds of the area of the floor of the pen or stall.

Formula

$F = 5,000 [1 + 1/d ((0.094 - 0.00035 L) y + (7.4 - 0.016 L))]$ Newton's per square metre, where:

F = floor load per square metre,

d = draught of the vessel corresponding to the anticipated lightest loaded water-line, in metres,

y = longitudinal distance from the midpoint of the pen to amidships, in metres, and

L = length between perpendiculars of the vessel in metres.

20. A floor support of a cattle pen that also forms a boundary of a pen on a lower deck, shall comply with paragraphs 17, 18 and 19.

21. In respect of a cattle pen structure above the uppermost continuous deck, the requirements of paragraphs 17 and 19 may be dispensed with if the owner of the vessel obtains the approval of the Director General to calculations showing that the rails and stanchions of the pens and the pen floor and floor supports of those pens in that structure are capable of withstanding appropriate design forces using the criteria specified by the survey authority or other classification society responsible for the design of the structure.

22. The maximum stresses permissible for materials used in the construction of the boundaries and floors of a pen must not exceed the values specified in the table to this paragraph, when under the loads determined in accordance with paragraphs 17, 19 or 21, as appropriate.

Table

Material	Maximum permissible tensile stress	Maximum permissible shear stress
Steel	0.75 x minimum yield stress	50 per cent of maximum permissible tensile stress
Aluminium	0.75 x 0.2 per cent proof stress	50 per cent of maximum permissible tensile stress
Other	as specified by the Director General / Recognised Organisation	as specified by the Director General / Recognised Organisation

Chapter 5

Arrangement of pens and stalls for cattle

23. A passageway shall be provided—

- (a) on at least one longitudinal side of each pen used to hold cattle, and
- (b) at the head of each stall used to hold cattle.

24. Stalls used to carry cattle shall be so arranged that access is provided to the rear of each stall.

25. The means of closing a cattle access to a pen or stall shall be a gate or portable rails capable of maintaining continuity of the strength and alignment of the adjoining boundary and of being secured against accidental lifting or removal or opening.

26. A pen floor or stall floor shall have a surface that provides a satisfactory non-slip foothold for cattle.

27. Where cattle are to be moved between decks, a ramp shall be provided that shall—

- (a) have a clear width between 750 millimetres and 900 millimetres,
- (b) have sides that—

- (i) are free from protrusions,
- (ii) extend to a height of not less than 1.40 metres perpendicular to the ramp floor, and
- (iii) are panelled or sheltered to a height of not less than 1.20 metres perpendicular to the ramp floor,
- (c) be fitted with foot battens that are—
 - (i) of a minimum height of 50 millimetres and a minimum breadth of 25 millimetres with edges well rounded, and
 - (ii) spaced at regular intervals of not more than 300 millimetres, each end batten being not more than 200 millimetres from the end of the ramp, and
- (d) have a gradient not exceeding 1 in 2.

Chapter 6

Unenclosed decks

28. The carriage of livestock on unenclosed decks shall be permitted subject to the following provisions—

- (a) The pens or stalls shall be fitted with a waterproof roof that is treated or insulated to minimise the absorption and conduction of solar heat and that extends not less than 450 millimetres beyond the deck area occupied by the pens or stalls.
- (b) The said deck shall be screened on the forward end of the deck by permanently fitted panelling which provides 100 per cent protection from sea, spray and weather, and shall have the facility to be screened—
 - (i) on the windward side of the vessel by portable panels which provide 100 per cent protection from sea, spray and weather, and
 - (ii) on the leeward side of the vessel by portable panels which provide at least 80 per cent protection from sea, spray and weather.
- (c) The feeding and watering arrangements for pens and stalls situated on unenclosed decks shall be screened effectively from sea, spray and weather.
- (d) Portable panels should be constructed of solid materials.

29. The freeboard of any unenclosed deck shall be such as to ensure that seas cannot encroach onto such deck.

Chapter 7

Spare pens and stalls

30. Spare pens shall be provided on each deck on which livestock are carried, having a minimum capacity determined in accordance with the table to this paragraph.

Table

Number of livestock carried on deck	Capacity of spare pens
Not more than 10	Nil
More than 10 but not more than 100	Sufficient for one animal
More than 100	Sufficient for one animal for each 100 or part thereof

Chapter 8

Portable equipment

31. For the purposes of this Chapter, portable equipment includes boxes, platforms and containers.

32. Only portable equipment which has been approved by the Director General shall be used for the carriage of livestock.

33. Portable equipment containing livestock shall—

(a) be stowed in a position—

(i) that enables the livestock to be suitably protected from the weather and not subject to machinery exhaust, and

(ii) that ensures suitable access to the equipment and livestock.

(b) be secured to prevent movement,

(c) be adequately lit and ventilated, and

(d) have adequate provision for feeding and watering and for cleaning and drainage.

34. Access to the said portable equipment shall be not less than 1.2 metres along the length of the equipment and there shall be a minimum of 1.0 metre end clearance, when the equipment is end loaded.

Chapter 9

Means of access for livestock

35. Vessels shall be equipped with a ramp or other suitable means of access for the loading or unloading of livestock.

36. The said means of access shall be so erected as to prevent any gap occurring between the vessel and the means of access and shall be set at a gradient not exceeding 1 in 2.

37. The said means of access shall—

(a) comply with paragraph 27 or in the case of sheep, paragraph 108, and

(b) have a strong secure closing arrangement at the point of entry to the vessel.

38. A means of access that is part of a vessel's equipment shall be designed to support a uniformly distributed load over the walking surface of not less than 4,700 Newton's per square metre.

39. The maximum permissible tensile stress for material used in the construction of the said means of access shall not exceed the values specified in the Table to this paragraph, under the applicable load specified in paragraph 38.

Table

Material	Maximum permissible tensile strength
Steel	0.5 x minimum yield stress
Aluminium	0.5 x 0.2% proof stress
Other	as specified by the Director General / Recognised Organisation

40. Where it is necessary for persons to be on the means of access referred to in paragraph 35 during the movement of livestock, such means of access shall be provided with a passage for such persons of not less than 550 millimetres width that shall be—

(a) fenced to a height of not less than one metre and with an intermediate horizontal rail approximately 550 millimetres above the walking surface, and

(b) fitted with treads at suitable stepping distances.

Chapter 10

Means of access and egress for persons

41. Each space in which livestock are carried shall have a minimum of two means of egress widely separated and giving unimpeded access for persons to an open deck. Such means of egress shall be clearly marked.

42. Access to a livestock area for persons shall be safe and, where combined with a ramp used for moving livestock between decks, be separated from the livestock ramp by the side sheathing of such ramp.

43. Each pen, stall or similar fitting shall be provided with a means of access for persons having a secure closing arrangement of a structural strength equivalent to the strength of the adjoining parts of the pen, stall or fitting.

44. Where access is required between a vessel's side and a pen, stall or similar fitting for the purpose of the safe and proper operation of the vessel, a passageway shall be provided that has a clear width of not less than 550 millimetres between the vessel's rail or bulwark and the rails or receptacles of the pen, stall or fitting.

Chapter 11

Ventilation

45. Subject to paragraph 47, each enclosed space for the carriage of livestock shall have a mechanical ventilation system which provides efficient air circulation in all parts of that space and which is of sufficient capacity to change the entire volume of air in that space—

(i) where the minimum clear height in the space is 2 metres or less, at a rate of not less than 40 times every hour,

(ii) where the minimum clear height in the space is 3.20 metres or more, at a rate of not less than 26 times every hour, and

(iii) where the minimum clear height in the space is between 2 metres and 3.20 metres, at a rate proportional to those specified in subparagraphs (i) and (ii).

46. (a) Subject to paragraph 47, each unenclosed space for the carriage of livestock shall have a mechanical ventilation system of sufficient capacity to change the entire volume of air in that space at a rate of 75 per cent of the rates specified in paragraph 45 where—

(i) the minimum clear height in the space is 2 metres or less, or

(ii) because of a partial enclosure of the space, the natural ventilation is restricted.

(b) The mechanical ventilation system should be capable of providing a minimum air velocity across any part of a pen from a source of supply of not less than 0.5 metres per second.

47. For the purposes of paragraphs 45 and 46, the total volume of the enclosed space shall include all the space contained between the vessel's side plating, bulkheads, tank top or decks enclosing the space, less the volume of any tank or trunk that is airtight within the space and no deduction shall be made in respect of the space occupied by livestock, pens or other livestock fittings.

48. Air intakes shall be so sited that air supplied to the livestock spaces is as clean and fresh as practicable and shall be effectively protected against blockage. Air exhaust outlets shall be sited as high as practicable and clear of accommodation structures.

49. The height of coamings for air intakes and exhausts above the freeboard deck shall be in accordance with the condition of assignment of load line required by the International Convention of Loadlines 1966.

50. Spare parts including, from each type of fan, one set of bearings, one rotor or impeller and one complete motor, sufficient to facilitate the repair or replacement of fans or fan motors, shall be carried on board.

Chapter 12

Electrical power sources

51. A vessel shall have two sources of power, a primary and a secondary source, each of which is sufficient to operate the mechanical ventilation systems independently.

52. The primary source of power shall be sufficient to supply continuous power for all parts of the voyage during which livestock are on board without interfering with the normal operation of the vessel.

53. The secondary source of power shall—

(a) be located in a space, no boundary of which is contiguous to a boundary of any space containing the primary source of power,

(b) be maintained in good working order and be capable of being readily started and placed on load in a time period not exceeding 15 minutes and at all times when loaded be in accordance with Rules and Guidelines of the vessel's Recognised Organisation,

(c) be capable of simultaneously operating the mechanical ventilation systems at full capacity, and providing fresh water and drainage to all livestock areas for a continuous period of three days, and

(d) in the event of fire or other hazard adversely affecting the operation of the primary source of power, remain capable of complying with the requirements of subparagraphs (b) and (c).

54. Instructions shall—

(a) be provided for the procedure for the changeover between main and secondary sources and vice-versa,

(b) be posted in the space containing the livestock source of power and shall be readable under the Emergency Lighting required by Regulation 43.2.2 of Chapter 11-1 of SOLAS, and

(c) detail, amongst other things—

- (i) the starting method,
- (ii) switchboard changeover, and
- (iii) electrical supply changeover to livestock services.

55. The livestock services switchboard and ventilation fan group starters shall be electrically subdivided where practicable, in separate compartments, to provide redundancy and limited supply of ventilation and/or services to each livestock deck in the event of switchboard failure.

56. The electrical supply cabling from both primary and secondary power sources serving the livestock switchboards/ fan group starters shall be as widely separated as practicable with neither supply passing through the same space.

57. A fan system failure alarm shall be fitted at a manned control position.

Chapter 13

Lighting

58. A vessel shall be equipped with fixed lamps providing illumination of not less than 20 lux, in the areas where livestock are carried, in the passageways between pens and between compartments, and in the routes leading from those areas to the open deck.

59. A vessel shall be equipped with fixed or portable lamps providing illumination of not less than 110 lux, powered by the vessel's electrical system, in any pen in which livestock are carried, to facilitate the close inspection of livestock.

60. A vessel shall be equipped with an emergency lighting system in each enclosed space containing livestock, which shall be automatically activated on the failure of the main electrical power sources of the vessel.

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61. The emergency lighting system referred to in paragraph 60, shall provide a level of illumination of not less than 8 lux in passageways and access routes for a continuous period of not less than 15 minutes.

62. The lamps at paragraphs 58, 59 and 60 shall be waterproof, of sufficient strength to resist damage by livestock and located in positions that are out of reach of the livestock.

63. Where lighting is provided in a space designed to carry feed in bulk, the lamp fixtures shall be of an explosion proof type. These lamps shall be controlled by switches situated on the navigating bridge or the feed handling machinery control point and visual means shall be provided to indicate when the lamps are on.

64. A lighting failure alarm shall be fitted at a manned control position.

Chapter 14

Drainage

65. Each pen used to carry livestock shall have a system for draining fluids effectively from the pen.

66. Drainage pipes or channels shall be in place to carry fluids drained from a pen as far as practicable clear of other pens.

67. Drainage tanks or wells shall be drained by a pump or eductor which shall be capable of handling semi-solid matter and shall evacuate the tank or well by lines other than the vessel's bilge lines.

68. Essential drainage tanks, wells and the top of drainage pipes in a vessel shall be accessible from outside livestock pens to facilitate inspection and cleaning.

69. A drainage channel and the top of a drainage pipe shall be covered by a strainer plate if, by being uncovered, it could cause injury to an animal or person.

70. The strainer plate referred to in paragraph 69 shall be of such design and so secured as not to cause a hazard to an animal or person.

71. Scupperways shall be provided in enclosed spaces to lead excess fluid clear of the fittings.

72. The scupperways referred to in paragraph 71 shall lead directly to drainage wells, and such scupper pipes must be fitted with accessible overboard discharge valves.

73. (a) A high level alarm shall be fitted in each drainage well and shall be operating to a manned control position.

(b) Alternative pumping equipment shall be available to ensure drainage in the event of failure of the primary pumping system.

(c) A holding tank or treatment plant shall be provided, complying with Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973, to treat, store and discharge effluent in accordance with that Annex. The holding tank shall be of sufficient capacity for the normal operation of the vessel when loaded—

(i) to ensure that effluent is not discharged in contravention with Annex IV of the MARPOLI Convention , and

(ii) to retain on board all effluent generated while the vessel is in areas for which discharge is prohibited, such as in port and within 12 miles of baselines.

Chapter 15

Firefighting appliances

74. Fire hydrants shall be provided so that at least two jets of water from separate hydrants can be simultaneously directed to any part of an area or deck where livestock are located and so that one of these jets of water is provided by a single length of hose.

75. The fire hydrants referred to in paragraph 74 shall be connected to the fire main provided on the vessel.

76. A fire hose, together with the necessary connections and a nozzle capable of directing water in a form of a spray jet, shall be provided—

(a) in an enclosed space, for each hydrant referred to in paragraph 74, or

(b) in any other space or on a deck, for each 50 metres length, or part thereof, of space or deck.

77. Each fire hose referred to in paragraph 76, shall be capable of being connected to any hydrant and to any other hose, other than hydrants and hoses within the engine room or accommodation areas.

78. Each fire hose, with its connections and nozzle, referred to in subparagraph 76 (a) shall be kept in a conspicuous position near the hydrant with which it is intended to be used.

79. Each fire hose, with its connections and nozzle, referred to in subparagraph 76 (b) shall be kept in a conspicuous position close to the entrances or stairways leading to the said space or deck.

80. Where hay or straw is carried or used in a space where livestock are located, there shall be provided—

(a) a portable fire extinguisher that uses water as the extinguishing medium, for every 18 metres or part thereof of the space, one of which shall be placed adjacent to an entrance to the space, or

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(b) a fixed fire-fighting installation that uses water as an extinguishing medium in a suitable location.

81. Where electrical equipment, other than lighting, is situated in an enclosed livestock space, an adequate number of portable compatible fire extinguishers, or fixed fire-fighting installations suitable for use with electrical equipment, shall be provided in that space.

82. Where hay, straw, other foodstuff or bedding of a flammable nature is used or carried, notices shall be prominently posted prohibiting smoking or the use of naked lights in a space in which any such substance is located.

83. Vessels shall have a schedule of inspection and testing of fire extinguishers on the livestock decks which is in accordance with SOLAS regulations.

84. A spare charge in respect of each fire-extinguisher shall be carried on board.

Chapter 16

Loading of bulk feed

85. Where bulk feed is to be loaded, the following conditions shall be complied with—

(a) 'NO SMOKING' signs shall be posted adjacent to pipe delivery outlets,

(b) lighting installed in the feed space shall be suitable for use in a dust-laden atmosphere or, alternatively, the lighting circuits shall be electrically isolated during loading,

(c) portable lighting in a feed storage space shall be suitable for use in a dust-laden atmosphere,

(d) electric motors and associated electrical equipment required to be used in the feed storage space shall be suitable for use in a dust-laden atmosphere,

(e) electrical motors and lighting circuits close to pipe delivery outlets shall be suitable for use in a dust-laden atmosphere or alternatively, electrically isolated during loading, and

(f) the loading operation shall be supervised by a ship's officer instructed by the master of a vessel.

86. Where feed is loaded by means of portable piping, the following conditions shall be complied with—

(a) a bulk feed truck shall be effectively earthed to a suitable part of the wharf or quay and, if a separate blower trailer is used, both truck and trailer shall be earthed,

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(b) the piping shall be arranged that it is electrically continuous or, where this is not the case, a bare wire strong enough to withstand normal handling shall be wound round the full length of the pipe in spiral fashion with a pitch of not more than 500 millimetres,

(c) the piping shall be effectively earthed to the vessel and all earth connections shall be secured with clips of a type which will ensure that there is no interruption or disconnection during the handling or manoeuvring of the piping,

(d) where more than one pipe length is used, they shall not, if practicable, be insulated from one another,

(e) where pipe connections depend on heavy duty seals that are not electrically conductive, each individual pipe length shall be earthed to the adjoining length by metal straps or shall be earthed separately, and

(f) a conductive sleeve of at least 500 millimetres long shall be fitted at the discharge end of the pipe and shall be electrically continuous with the pipe or, if fitted, the bare spiralled wire referred to in subparagraph (b).

Chapter 17

Stowage of bulk feed

87. A vessel shall have the facility of stowing feed other than hay in not less than two separate spaces which are protected from the weather, the sea and sea spray.

Chapter 18

Feed and water receptacles

88. (a) Without prejudice to paragraph 90, a pen, stall or similar fitting shall be equipped with receptacles for the feeding and watering of livestock,

(b) Where the feed is provided by a system other than an automatic system, the receptacles shall be capable of containing a minimum of 33 per cent of the daily allowance of feed for the number of animals contained in the pen, stall or fitting, and

(c) The watering system for the livestock on board shall be an automatic system.

89. A receptacle, provided in accordance with paragraph 88, shall be—

(a) suitable for the livestock carried,

(b) readily accessible to the livestock,

(c) capable of being serviced from outside the pen, stall or other fitting,

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(d) so installed as not to impede ventilation,

(e) so constructed and positioned, so that feed dust is not to be disturbed by the flow of ventilation, and

(f) so positioned as not to be readily fouled by faeces.

90. A feeding receptacle is not required for a pen containing livestock—

(a) where the pen adjoins a passageway and the livestock can conveniently consume feed distributed on the floor of the passageway, and

(b) where urine, faeces or water used in washing any pen are prevented from fouling the passageways.

91. Where hay is to be presented to livestock other than on the floor, the top edge of the rack or other receptacle used for such presentation shall be no more than 0.5 metres higher than the floor of the pen or stall served by such rack or receptacle.

Chapter 19

Fresh water services

92. A vessel shall be equipped with a fresh water service in each of the areas where livestock are carried.

93. The watering system for livestock on board shall be automatic and shall be constructed so as to—

(a) minimise by control of the level of water any spillage from the receptacles,

(b) prevent the return of water from a receptacle to the fresh water tank, and

(c) incorporate provision to isolate fresh water service to each livestock deck or section of deck.

94. A vessel shall be equipped with pumps which are capable of continuously supplying fresh water to livestock.

95. Alternative pumping equipment shall be available to ensure water supply in the event of failure of the primary pumping system. The alternative pumping equipment may consist of either—

(a) a portable pump, or

(b) a fixed pump, located outside the space occupied by the primary source of power and powered by the secondary source of power. The alternative pumping systems shall be capable of being used with not less than one fresh water tank on the vessel and such tank or tanks shall contain a quantity of water sufficient for the number of livestock on board for a minimum of three days.

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Chapter 20

Veterinary equipment

96. Vessels shall carry veterinary equipment, including a humane killing device, medicines, instruments and stores, appropriate to the number and type of livestock on board.

Chapter 21

Maintenance

97. Vessels shall carry spare parts sufficient to facilitate the repair of faults in the power, lighting and pumping equipment.

98. Vessels shall be subject to a planned maintenance schedule for livestock fittings and equipment and contain a record of maintenance checks and repairs on board.

Chapter 22

Design of pens and passageways for sheep

99. Without prejudice to paragraph 100, the construction of pens for sheep and of adjacent passageways shall comply with the specifications shown in the table to this paragraph.

	Table
Detail of design	Dimension
Maximum distance between rails aligned fore and aft	4.5 metres
Minimum distance between rails aligned fore and aft	2.0 metres
Maximum distance between rails aligned athwartships	Not more than twice the distance between rails aligned fore and aft
Minimum distance between rails aligned athwartships	Not less than the distance between rails aligned fore and aft
Maximum clear floor area within pen	40.5 square metres
Minimum clear height within pen	1.1 metres

Minimum height of top edge of upper most rail above pen floor except that the height of that rail may be decreased if the clear height above the rail does not exceed 300 millimetres	900 millimetres
Maximum clear vertical distance between rails	300 millimetres
Maximum clear vertical distance below bottom edge of lowest rail of pen installed at deck level	200 millimetres
Maximum clear vertical distance below bottom edge of lowest rail of pen not installed at deck level	50 millimetres
Minimum width of adjacent passageway clear of receptacles and any other obstructions	900 millimetres

100. In respect of the side of a pen in a structure on an unenclosed deck, if that side forms part of the boundary of that structure but is not contiguous with a passageway—

(a) the maximum clear vertical space below the bottom edge of the lowest rail and the top of a deck boundary angle or fashion plate, shall be 100 millimetres, and

(b) the maximum clear vertical space between rails shall be 200 millimetres except that the maximum clear vertical space between the uppermost rail and the next lower rail may be 250 millimetres.

101. The sides of pens, passageways, ramps and any areas where sheep are kept or through which they pass shall be vertical.

Chapter 23

Strength of pens and passageways for sheep

102. Without prejudice to paragraph 106, rails and stanchions forming a fore and aft boundary of a sheep pen shall be capable of withstanding a load per metre length determined by the application of the formula to this paragraph, uniformly distributed up to the height of the top of the uppermost rail the centre of which is at a height of not more than 900 millimetres above the pen floor.

Formula

$F = 1668 B (0.574 + 0.252 Z)$ Newton's per metre length where:

F = load per metre length of boundary,

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B = maximum breadth of pen in metres, and

Z = the vertical distance from a point 0.50 metre above the pen floor to the vessel's water-line corresponding to the anticipated lightest load in metres.

103. Rails and stanchions forming a boundary of a sheep pen other than a fore and aft boundary referred to in paragraph 102, shall be, where possible, of the same method of construction and of the same scantlings as determined by the application of Formula 3 above, for the fore and aft boundaries.

104. Without prejudice to paragraph 106, the floor and floor supports of a sheep pen shall be capable of withstanding a load, determined by the application of the formula to this paragraph, uniformly distributed over any two-thirds of the area of the floor of the pen.

Formula

$F = 2500 [1 + 1/d ((0.094 - 0.00035L) y + (7.4 - 0.016L))]$ where:

F = floor load, per square metre,

d = draught of the ship corresponding to the anticipated lightest loaded water-line, in metres,

y = longitudinal distance from the midpoint of the pen to amidships, in metres, and

L = length between the perpendiculars of the vessel in metres.

105. A floor support of a sheep pen that also forms a boundary of a lower pen shall comply with paragraphs 102, 103 and 104.

106. In respect of a livestock pen structure above the uppermost continuous deck the requirements of paragraphs 102, 103 and 104 may be dispensed with if the owner of a vessel obtains the approval of the Director General to calculations showing that the rails and stanchions of the pens and the pen floor and floor supports of those pens in that structure are capable of withstanding appropriate design forces using the criteria specified by the survey authority or other classification society responsible for the design of the structure.

107. The maximum stresses permissible for materials used in the construction of the boundaries and floors of a pen must not exceed the values specified in Table 5, above, when under the loads determined in accordance with paragraphs 102, 104 and 106 as appropriate.

Chapter 24

Arrangement of pens and passageways for sheep

108. Where sheep are to be moved between decks, a ramp shall be provided and shall—

(a) have a minimum clear width of 550 millimetres,

(b) have sides that—

(i) are free from protrusions, and

(ii) extend to a height of not less than 900 millimetres perpendicular to the ramp floor,

(c) be fitted with foot battens that are—

(i) of a minimum height of 25 millimetres and a minimum breadth of 10 millimetres with edges well rounded, and

(ii) spaced at regular intervals of not more than 300 millimetres each end batten being not more than 100 millimetres from the end of the ramp,

(d) have a gradient not exceeding 1 in 2.

109. If pens are constructed in more than one tier on a deck, walkways shall be provided so that no pen floor is at a height of more than 1.50 metres above the deck or a walkway and such walkways shall be so constructed as to not interfere with the safe use of any passageway beneath a walkway and must have a minimum clear height of 1.8 metres.

Schedule 2

Stability calculation criteria for vessels

A. Effects of shift and wind

1. The effect of the shift of livestock should be taken into account in the following manner:

(a) The heeling lever due to the shift of livestock at 0° is to be given by:

(Average mass of livestock carried x livestock shift constant), divided by (floor area required per head of livestock x displacement) where:

(i) average mass of livestock carried means the average mass of livestock to be carried on the intended voyage,

(ii) floor area required per head of livestock means the floor area required per head of average mass of the livestock to be carried on the intended voyage, and

(iii) livestock shift constant is:

$1/6$ [length of each pen x (breadth of each pen)²].

Note 1: For vessels with uniform breadth of pens the livestock shift constant becomes:

$1/6$ [breadth of pen x total floor area of pens].

Note 2: For vessels with varying breadths of pen, the largest breadth may be used and the livestock shift constant becomes:

$1/6$ [maximum breadth of pen x total floor area of pens].

(b) The heeling lever due to the shift of livestock at 40° is to be given by:

0.8 (heeling lever due to the shift of livestock at 0°).

(c) The heeling lever curve is to be taken as a straight line joining the heeling lever at 0° and the heeling lever at 40°.

2. The effect of the shift of feed should be taken into account in the following manner:

(a) The heeling lever due to the shift of feed in pellet form carried in bulk at 0° is to be given by:

(total shift moment of feed) divided by (stowage factor of feed x displacement)

where total shift moment means the sum of the shift moment of each compartment which is to be given by $0.044 lb^3$ where:

(i) l is the maximum length of the compartment, and

(ii) b is the maximum breadth of the compartment.

Note: The use of volumetric shift moments for the feed, where the surface is assumed to take up an angle of repose of 15 degrees to the horizontal for full compartments and 25 degrees to the horizontal for partly filled compartments, is an acceptable alternative method to obtain the total shift moment of feed.

(b) The heeling lever due to the shift of feed in pellet form carried in bulk at 40° is to be given by:

0.8 (heeling lever due to the shift of feed at 0°).

(c) The heeling level curve is to be taken as a straight line joining the heeling lever at 0° and the heeling lever at 40°.

3. The effect of wind should be taken into account in the following manner:

(a) The heeling lever due to the effect of wind at 0° is to be given by:

(PAH) divided by (Displacement)

where:

(i) P (wind pressure) is 0.05 tonnes/m²,

(ii) A is the lateral area of the vessel above the waterline in square metres, and

(iii) H is the vertical distance between the control of the lateral area of the vessel above the waterline and the centroid of the vessel's underwater lateral area.

Note: For both subparagraphs (ii) and (iii) the lateral area and height of baled hay carried on deck must be taken into account.

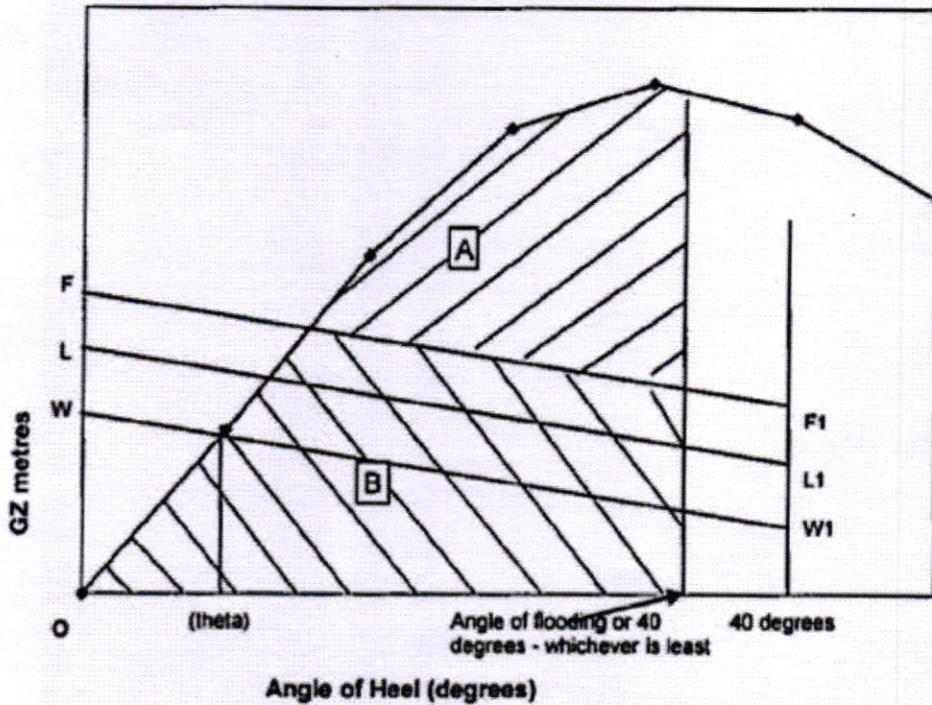
Note: For many vessels the vertical position of the centroid of the underwater lateral area may be taken at half the draft to the underside of the keel at amidships.

(b) The heeling lever due to the effect of wind at 40° is to be given by:

0.8 (heeling lever due to the effect of wind at 0°).

(c) The heeling lever curve is to be taken as a straight line joining the heeling lever at 0° and the heeling lever at 40°.

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where:

(i) OW is the heeling lever at 0° due to wind,

(ii) WW1 is the heeling lever curve due to wind,

(iii) WL is the heeling lever at 0° due to the shift of livestock,

(iv) LL1 is the heeling lever curve due to the combined effects of the wind and the shift of livestock,

(v) LF is the heeling lever at 0° due to the effect of shift of feed,

(vi) FF1 is the heeling lever curve due to the combined effects of wind and the shift of livestock and feed, and

(vii) é is the angle of heel due to wind.

Note: If feed is not pellet feed carried in bulk, the heeling lever due to shift of feed will be zero.

B. Information to be provided on vessel

The following stability information should be provided on the vessel:

(a) Livestock shift constant:

The livestock shift constant is to be determined for all conditions of pen utilization that may arise in practice unless the maximum value is used for all calculations.

(b) Heeling moment for feed:

The heeling moment for each compartment is to be determined separately unless the greatest heeling moment for all compartments added together is provided: that is, the total heeling moment for the worst condition of stability.

(c) Wind effect:

The values of A and H will vary with the draft of the vessel. Values therefore are to be provided for the range of drafts that may occur in practice or alternatively the wind effect:

(PAH) divided by (Displacement) may be given in tabular or graphical form.

C. Method of calculations

1. The following method of calculation may be used to demonstrate compliance.

(Other methods may be used).

(a) Information required:

- Livestock shift constant = C (from vessel's information)
- Average Mass of livestock per animal = m (from shipper's declaration)
- Floor area per animal = f (from table in Regulation 25)

Feed heeling moment	= F (from vessel's information)
Stowage factor of feed	= S (from master)
Lateral area of vessel above waterline	= A (from vessel's information)
Vertical separation of centroids	= H (from vessel's information)
Wind pressure	= P (0.05 tonnes/square metre)
Displacement	= D (from vessel's information)
GM	= GM (from vessel's information)
Moulded breadth	= B (from vessel's information)

(b) Calculation:

- (i) Livestock: Heeling lever at 0° = $\frac{m \times C}{T \times D} = Z$
- (ii) Feed: Heeling lever at 0° = $\frac{F}{S \times D} = Y$
- (iii) Wind: Heeling lever at 0° = $\frac{0.005 \times A \times H}{D} = X$
- (iv) Angle of heel due to wind: Angle of heel = $\frac{X}{GM} \times 57.3$
- (v) Roll period: $\frac{0.7B}{\sqrt{GM}}$

2. In calculating the stability of the vessel, the use of fuel oil, fresh water and feed, the movement of ballast and the buildup of waste material shall be taken into account.