

PROVISIONAL LOCAL VESSEL ADVISORY COMMITTEE

CODE OF PRACTICE - SAFETY STANDARD FOR CLASS I, II AND III VESSELS

1 Purpose

This paper seeks members' approval on the draft "Code of Practice Safety Standard for Class I, II and III Vessels" as presented at Annex to this paper.

2 Background

2.1 The new Merchant Shipping (Local Vessels) Ordinance (LVO) stipulated that, inter alia, the Director of Marine may -

- (i) approve and issue such codes of practice as in his opinion are suitable for that purpose;
- (ii) approve different codes of practice for different classes of local vessels.

2.2 The Code of Practice (the Code) attached is prepared for the following classes of locally licensed commercial vessels graded in accordance with the size and type of vessel:

- Class I - Passenger Carrying Vessel
- Class II - Cargo Vessel
- Class III - Fishing Vessel

3 Determination of Safety Standards

The safety standards in the Code are set on normal shipbuilding practice, i.e. vessels' operational risk factors such as number of passengers, type of cargo, plying limits, etc. The following principles are adopted on the consideration of the standards:

- (i) as far as possible the existing standards are to be maintained if those are proved to be satisfactory;
- (ii) equitable standards are applied to vessels performing similar commercial functions;
- (iii) in view of the increasing volume of vessels trafficking to and fro Hong Kong and mainland, a standard close to those of the Chinese vessels plying in the same areas will be adopted; and
- (iv) if changes on standard are necessary, such changes will be gradually introduced.

4 Legal Status of the Code

The Code may be used for evidential purposes in any proceedings under the LVO where a person is alleged to have contravened such a requirement, thereby breaching the seaworthiness clause.

5 Implications

The Code will provide practical and transparent guidance in respect of safety standard. The Code will also enable the authorized surveyors delegated by the Director to conduct survey of local vessels.

6 Consultation

The draft Code had been studied and approved by the Technical Sub-committee under PLVAC. Furthermore the concerned trading associations also were consulted.

7 Application

The Code will come into operation when the LVO comes into force, by notice in the Gazette.

8 Amendment of the CoP

The Director may from time to time approve, revise or withdraw his approval the whole or any part of any code of practice; upon the advice of the LVAC and such other interested persons as he thinks fit.

Members are welcome to give comment on the contents of this paper. Members will be asked whether the contents of this paper should be endorsed.

Local Vessels Safety Branch
Shipping Division
Marine Department
November 2002

Draft

CODE OF PRACTICE -----

SAFETY STANDARD FOR CLASS I, II, and III VESSELS

(This Code is issued under Section 8 of the Merchant Shipping
(Local Vessels) Ordinance, Cap 548)

HONG KONG MARINE DEPARTMENT

(August, 2002)

CODE OF PRACTICE

SAFETY STANDARDS FOR CLASS I, II AND III VESSELS

CHAPTER I

GENERAL

Section		Page
1	Introduction	I-1
2	Statutory Regulations	1
3	Definitions	2
4	Application	5
5	Category of Vessel	6
6	Application for Survey	8

CHAPTER II

SURVEY, ISSUANCE OF CERTIFICATE AND PLAN APPROVAL

1	Survey for Issue or Endorsement of Certificate	II-1
2	Validity of Certificates and Endorsement	2
3	Surveys conducted by Authorized Surveyor	2
4	Survey Items and Survey Programmes	3
	Table 1 Initial Survey.....	3
	2 Periodical Construction Survey	5
	3 Final Survey	8
5	Submission of Plans and Data	10
6	Plans and Data required to be submitted	10
7	Plans to be retained onboard	12

CHAPTER III A

HULL CONSTRUCTION, MACHINERY, ELECTRICAL INSTALLATIONS AND FITTINGS - CATEGORY A VESSELS

PART 1	GENERAL REQUIREMENTS	IIIA-1
PART 2	HULL CONSTRUCTION	1
1	Main Deck Construction	1
2	Bulkheads	1
3	Closing Appliances	2
4	Protection of Passengers and Crew	2
5	Flooring	3
6	Marking of Hull	3
PART 3	MACHINERY INSTALLATION	3
7	Main Engine and Gear Box	3
8	Engine Fittings	4
9	Propeller Shafting	5
10	Engine Room	5
11	Nature of Fuel	5
12	Fuel Tanks	6
13	Pumping and Piping Arrangement	6
14	Bilge Pumping Arrangement	6
15	Compressed Air System	7
16	Anchors, Cables and Windlass	8
17	Steering System	8
18	Wheelhouse - Engine Room Communication	9
19	Installation for Prevention of Oil Pollution	10
20	Pollution Prevention for Vessels carrying Noxious Liquid Substances	12
PART 4	ELECTRICAL INSTALLATION	13
21	Electrical Power Source	13
22	Precautions against Shock, Fire and Other Hazards of Electrical Origin	13

CHAPTER III B

HULL CONSTRUCTION, MACHINERY, ELECTRICAL INSTALLATIONS AND FITTINGS - CATEGORY B VESSELS

PART 1	GENERAL REQUIREMENTS	IIIB-1
PART 2	HULLCONSTRUCTION	1
1	Hull and Bulkheads	1
2	Closing Appliances	2
3	Means of Protection	2
4	Flooring	2
5	Marking of Hull	2
PART 3	MACHINERY INSTALLATION	2
6	Main Engine and Engine Fitting	2
7	Engine Room	3
8	Nature of Fuel	3
9	Positioning and Construction of Fuel Tanks	3
10	Pumping and Piping Arrangement	3
11	Bilge Pumping Arrangement	3
12	Compressed Air System	3
13	Wheelhouse - Engine Room Communication	3
14	Oil Pollution Prevention Installation	4
PART 4	ELECTRICAL INSTALLATION	4
15	Electrical Installations	4

CHAPTER IV

FREEBOARD AND STABILITY

1	Freeboard Assignment, Certification, Intact Stability	IV-1
---	---	------

Section		Page
2	Damage Stability	7
3	Inclining Experiment	7
4	Lightweight Survey	7
5	Determination of Deadweight and Its Effects	7
6	Stability Information Booklet	8
7	Permanent Ballast	8
8	Lashing of Cargo	8
9	Modification onboard	8

CHAPTER V

PASSENGER AND CREW ACCOMMODATION

1	General Requirements	V-1
2	Deck Areas Disallowed as Passengers Spaces	1
3	Maximum Carrying Capacity and Seating	2
4	Stairway, Passageway, Door and Exit in Passenger Space	2
5	Ventilation, Lighting, Deck Sheathing and Insulation in Passenger Space	3
6	Sanitary Apparatus	4
7	Public Address System	5
8	Boarding Facility On Ferry Vessel	5
9	Marking in Passenger Space	5

CHAPTER VI

FIRE PROTECTION

1	Acceptance of Appliances	VI-1
2	General Requirements for Fire Fighting Appliances	1

CHAPTER VII**LIFE SAVING APPLIANCES AND ARRANGEMENTS**

1	General	VII-1
2	Stowage of Appliances	1
3	Maintenance of Appliances	2

CHAPTER VIII**LIGHTS, SHAPES AND SOUND SIGNALS**

1	General	VIII-1
2	Definitions	1
3	Alternative Lights	1
4	Lights and Sound Signals	1

CHAPTER IX**TONNAGE MEASUREMENT**

PART 1	GENERAL	IX-1
1	Application	1
2	Method of Tonnage Measurement	1
PART 2	ASCERTAINMENT OF TONNAGE	2
3	Vessels of 24M in Length and Above	2
4	Wooden Fishing Vessels, Kaitos, Vessels of less than 24M in Length	2

CHAPTER X**VESSEL OPERATOR REQUIREMENTS**

1	General	X-1
2	Certificate Classes and Validity	1

Section		Page
3	Vessel Permitted to be Operated by Combined Coxswain and Engine Operator	2
4	Radar Operator	2

CHAPTER XI

VESSELS BUILT TO CLASSIFICATION SOCIETY'S RULES AND REGULATIONS FOR HIGH SPEED CRAFT

1	General	XI-1
2	Intact Stability	1
3	Damaged Stability	1
4	Seating construction, Safety belts	1
5	Directional control system	1
6	Structural fire protection	1
7	Fire detection and fixed fire extinguishing system	2
8	Remote control, alarm and safety systems	2
9	Radar installations	2
10	Wheelhouse Layout	2
11	Documentation	2
12	Failure mode and effect analysis	2
13	Operational and safety trial	3

CHAPTER XII

SPECIAL REQUIREMENTS FOR VESSELS CARRYING DANGEROUS GOODS

PART 1 HULL CONSTRUCTION AND EQUIPMENT		XII-1
1	Hull Construction	1
2	Windlass	1
3	Signals	1
4	Notices	1

Section	Page
PART 2 CARRIAGE OF DANGEROUS GOODS IN PACKAGED FORM OR IN SOLID FORM IN BULK	2
5 Regulatory Requirements	2
6 Dumb Steel Lighters carrying Packaged Dangerous Goods in Freight Containers	2
PART 3 CARRIAGE OF CARRIAGE OF DANGEROUS GOODS IN LIQUID FORM IN BULK	4
7 Carriage of Flammable Cargoes	4
8 Carriage of Dangerous Liquid Chemicals	4

ANNEX A

RULES AND REGULATIONS APPLICABLE TO LOCAL VESSELS

ANNEX B

FREEBOARD MARK

1 Position of Marks	B-1
2 Method of Marking	1
3 Details Marks	1

ANNEX C

SPILL OUT METHOD

ANNEX D

STABILITY WHEN LIFTING

1 Conditions to be computed	D-1
2 Stability Standard	1

ANNEX E**APPROXIMATE DETERMINATION OF STABILITY**

Part 1	SIMPLE INCLINING TEST	E-1
1	General	1
2	Test Procedure	1
3	Acceptance of Stability	1
Part 2	ROLLING PERIOD TEST	2
4	General	2
5	Test Procedure	2
6	Determination of Metacentric Height (GM)	2

ANNEX F**DAMAGED STABILITY REQUIREMENTS
FOR LAUNCHES, FERRY VESSELS**

Part 1	DAMAGED STABILITY REQUIREMENTS	F-1
Part 2	ASSUMPTIONS OF WHICH CALCULATIONS ARE TO BE BASED	1
Part 3	SUFFICIENCY OF STABILITY IN THE DAMAGED CONDITION	2

ANNEX G**GUIDANCE PLAN FOR DETERMINATION OF PASSENGER
SPACE FOR LAUNCHES, FERRY VESSELS, TUGS,
TRANSPORTATION BOATS AND PILOT BOATS**

G-1

ANNEX H**DOMESTIC LIQUEFIED PETROLEUM GAS
INSTALLATION**

H-1

ANNEX I
MISCELLANEOUS GUIDANCE NOTES

CHAPTER I

GENERAL

[020819]

1 Introduction

- 1.1. The legislation relating to the control, licensing and regulation of local vessels is contained in the Merchant Shipping (Local Vessels) Ordinance, cap 548, and its subsidiary legislation. This Code of Practice issued under section 8 of the Ordinance is to lay down the technical and safety standards in the design, construction, maintenance and inspection for the local vessels.
- 1.2 The designers, builders, owners, operators and coxswains of every local vessel should ensure that the vessel should be built and maintained in accordance with the relevant regulations and the standards adapted in this Code.

2 Statutory Regulations

- 2.1 This Code should be read in conjunction with the following statutory provisions and their amendments from time to time (if any):
 - (a) Merchant Shipping (Local Vessels) Ordinance, Cap. 548 (hereafter referred to as 'Ordinance')
 - (b) Merchant Shipping (Local Vessels) (General) Regulation, Cap. 548 sub. leg.
 - (c) Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation, Cap. 548 sub. leg.
 - (d) Merchant Shipping (Local Vessels) (Works) Regulation, Cap. 548 sub. leg.
 - (e) Merchant Shipping (Local Vessels) (Fees) Regulation, Cap. 548 sub. leg.
 - (f) Merchant Shipping (Local Vessels) (Safety Survey) Regulation, Cap. 548 sub. leg. (hereafter to be referred as "safety survey regulation")
 - (g) Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations, Cap. 369 sub. leg.
 - (h) Merchant Shipping (Prevention of Oil Pollution) Regulations, Cap. 413 sub. leg.
 - (i) Merchant Shipping (Control of Pollution by Noxious Liquid Substances in Bulk) Regulations, Cap. 413 sub. leg.
 - (j) Dangerous Goods Ordinance, Cap. 295
 - (k) Dangerous Goods (Application and Exemption) Regulations, Cap. 295 sub. leg.
 - (l) Dangerous Goods (General) Regulations, Cap. 295 sub. leg.
 - (m) Dangerous Goods (Shipping) Regulations, Cap. 295 sub. leg.

3 Definitions

3.1 In this Code-

“approved”, in relation to equipment, appliances, machinery, any other fittings or materials, means approved by the Director;

“authorised surveyor” means a person, or a person belonging to a class of persons, who is not a public officer, appointed by the Director under section 7(1) of the Ordinance to be a surveyor for the purposes of the Ordinance and noticed in the Marine Department Notice from time to time;

“chemical carrier” means any vessel constructed or adapted and used for the carriage in bulk of any liquid product listed in chapter 17 of the IBC Code;

“certificate” means a Certificate of Survey, a Record of Safety Equipment, a Freeboard Assignment Certificate, a Hong Kong Load Line Certificate, a Hong Kong Oil Pollution Prevention Certificate, a Hong Kong Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk or a Declaration of Fitness for the Carriage of Dangerous Goods issued by the Director under the Merchant Shipping (Local Vessels) (Safety Survey) Regulation;

“Class I vessel” means any vessel, other than a Class IV vessel, which is permitted to carry more than 12 passengers;

“Class II vessel” means any vessel, other than a Class IV vessel, which is permitted to carry not more than 12 passengers;

“Class III vessel” means any vessel used exclusively for fishing and related purposes;

“Class IV vessel” means any vessel used exclusively for pleasure purposes, regardless of the number of passengers it is permitted to carry;

“classification societies” means the classification societies recognised by the Director, which are as follows :

- (a) American Bureau of Shipping;
- (b) Bureau Veritas;
- (c) China Classification Society;
- (d) Det Norske Veritas;
- (e) Germanischer Lloyds;
- (f) Korean Register of Shipping
- (g) Lloyd’s Register of Shipping; and
- (h) Nippon Kaiji Kyokai;

“crew” means the coxswain and any other person employed or engaged in any capacity on board a local vessel on the business of the vessel;

“dangerous goods” means -

- (a) goods classified in the IMDG Code or any other IMO publication as dangerous for carriage by sea; and
- (b) any other substance or goods the properties of which might be dangerous if such substance or goods were carried by sea,

and includes empty receptacles, and residues in empty tanks or cargo holds, which have been used previously for the carriage of dangerous goods, except where such receptacles, empty tanks or cargo holds have been –

- (i) cleaned and dried;
- (ii) gas freed or ventilated as appropriate; or
- (iii) where the previous contents were radioactive substances, cleaned and adequately closed,

but shall not include goods forming part of the equipment or stores of the vessel in which goods or substances are carried;

“dangerous goods carrier” means a vessel, other than an oil carrier, certificated for the carriage of dangerous goods;

“Declaration” means Declaration of Survey;

“Director” means the Director of Marine;

“engine room” means a space of any vessel which contains propulsion machinery and/or generators;

“existing vessel” means a vessel which is not a new vessel;

“favourable weather” means weather, when the visibility is good and when the combined effects of wind, sea or swell, upon the ship under consideration are never greater than those which would cause moderate rolling or pitching, or result in the shipping of green seas on to the main deck (in the case of open boats, over the gunwale);

“ferry vessel” means a vessel operating a franchised service or a licensed service as defined in the Ferry Services Ordinance (Cap. 104);

“high risk vessel” means a Class I vessel, an Oil Carrier, a Dangerous Goods Carrier, a Noxious Liquid Substances Carrier or any Class II vessel intended for carrying cargoes of hazardous nature;

“HSC Code” means the International Code of Safety for High Speed Craft adopted by the Maritime Safety Committee (MSC) of the IMO by resolution MSC 36(63), as may be amended by the MSC from time to time;

"IBC Code" means the 1998 edition of the IMO International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, as may be amended by the IMO from time to time;

"IMDG Code" means the International Maritime Dangerous Goods Code, published by the IMO as amended from time to time by IMO;

"IMO" means the International Maritime Organization;

"length (L)" means the registered length and the greater of the following -

- (a) the distance between the fore side of the stem and the axis of the rudder stock; or
- (b) a distance measured from the fore side of the stem, being 96% of the distance between that point and the aft side of the stern,

the said points and measurements being taken respectively at and along the waterline which shall be at 85% of the least moulded depth of the vessel. In the case of a vessel having a rake of keel the waterline shall be parallel to the designed waterline. In the case of a vessel in which no rudder stock is fitted, the registered length shall be determined as per paragraph (b);

"low risk vessel" means a vessel of other than high risk vessel;

"main engine" means the propulsion engine(s) of vessel;

"new vessel" means-

- (a) a vessel in respect of which an application for an operating licence is made for the first time; or
- (b) an existing vessel which is undergoing alteration of its registered length, moulded breadth and/or moulded depth; or
- (c) an existing vessel in respect of which an application for alteration of its class as specified in the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation is made

on or after the commencement of the Ordinance;

"noxious liquid substance carrier" means a mechanised, or a non-mechanised vessel, constructed or adapted for the carriage in bulk of any substance listed in column (a) of the table in Chapter 17 of the IBC Code (being a substance falling into category A, B, C or D) and any other liquid substance which is provisionally listed or class-approved as a category A, B, C or D substance;

“oil carrier” means a motor tanker, or a dumb barge, constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature (including sludge oil);

“passenger” means any person carried in a vessel other than -

- (a) a member of the crew;**
- (b) a child under 1 year of age;**

“river trade limits” means-

- (a) the waters in the vicinity of Hong Kong within the following boundaries-**
 - (i) to the East, meridian 114° 30' East;**
 - (ii) to the South, parallel 22° 09' North; and**
 - (iii) to the West, meridian 113° 31' East; and**
- (b) all inland waterways in the province of Kwangtung and Kwangsi on the mainland of China to which access can be obtained by water from the area defined in paragraph (a).**

“transportation vessel” means a vessel licensed as a launch under the repealed Merchant Shipping (Launches and Ferry Vessels) Regulations, used for the carriage of not more than 12 passengers within the Hong Kong waters.

4 Application

- 4.1 Subject to paragraphs 4.2 below, this Code will apply to Class I, II and III vessels of all types of construction.
- 4.2 Chapter XI will apply to dynamically supported craft, and vessels which are designed and built to the requirements of rules and regulations applicable to high speed craft issued by a classification society as listed in Annex A of this Code.
- 4.3 Existing vessels shall comply with the requirements previously applicable to these vessels unless otherwise expressly specified in the safety survey regulation. The approval and/or exemption of construction and equipment, if any, given to the existing vessels shall remain valid unless otherwise repealed.
- 4.4 Requirement in pair of angle brackets < > appeared in the other chapters in this Code are applicable to new vessels only.

5 Category of Vessel

- 5.1 Every vessel shall be categorised into Category A or B as indicated in the following table :

Class and Type of Vessel (6)	Vessel Category	A		B	
	Material of Construction	Steel/Al/ Wood/GRP		Wood	Steel/Al/ Wood/GRP
	Propulsion	Mechanically Propelled	Non-Mech. Propelled	Mechanically Propelled	Non-Mech. Propelled
Class I Vessel					
Launch (incl. new Class IV vessel carrying > 60 passengers)		*			
Ferry Vessel		*			
Floating Restaurant			*		
Ceremonial Boat			*		* (1)
Primitive Transportation Vessel (katio)				*	
Class II Vessel					
Dangerous Goods Carrier		*	*	* (1)	* (1)
Noxious Liquid Substances Carrier		*	*		
Oil Carrier		*	*		
Edible Oil Carrier		*	*		
Dry Cargo Vessel		*		*(2)	
Dumb Lighter (incl. Flat Top Cargo Barge)					*
Dredger		*			
Hopper Barge					*

Class and Type of Vessel (6)	Vessel Category	A		B	
	Material of Construction	Steel/Al/Wood/GRP		Wood	Steel/Al/Wood/GRP
	Propulsion	Mechanically Propelled	Non-Mech. Propelled	Mechanically Propelled	Non-Mech. Propelled
Class II Vessel (cont'd)					
Water Boat		*(3)		*	
Tug		*			
Transportation Boat		*			
Transportation Sampan				*	
Pilot Boat		*		*(1)	
Floating Dock			*		
Floating Workshop (incl. Repair Barge, Welding Barge)		*	*	*(1)	*(1)
Crane Barge			*		*(1)
Work Boat		*(3)		*	*
Flat Top Work Barge		*(3)		*	*
Landing Pontoon					*
Separation Barge					*
Kitchen Barge			*		*(1)
Ice Barge					*
Fish Drying Barge					*
Water Dispensing Barge					*
Fish Storage Barge					*
Class III Vessel					
Fishing Vessel		*(4)		*	*
Fishing Sampan				*(5)	

(asterisk* means applicable)

Abbreviations in Table

Al : Aluminium
GRP : Glass reinforced plastic

Remarks in Table

- (1) Existing vessels only.
- (2) Wooden cargo vessels (including wooden trading boats) operating solely within the Hong Kong waters.
- (3) Vessels of other than wooden construction.
- (4) Other than wooden vessels and vessels of GRP construction up to 15 metres in length.
- (5) Vessels of GRP construction of prototype up to 15 metres in length.
- (6) Any other type of vessel not included in the table will be specially considered.

6 Application for Survey

- 6.1 Subject to subsection 6.2 below the owner or builder applies for the issue of a certificate to a vessel should:
- (a) submit an "Application for Survey";
 - (b) submit the plans and data as stipulated in Chapter II (required only for new vessel or modification on existing vessel); and
 - (c) arrange the vessel to be surveyed as per items stipulated in Chapter ~~II~~ III.
- 6.2 The application for survey of a new vessel is subject to prior provisional approval for licensing having been obtained from the Licensing and Port Formality Section. Before building any vessel the owner or builder when submitting the initial application should furnish the following information for consideration:
- (a) Ship's Name/Hull Number;
 - (b) Ship's Particulars;
 - (c) Ship's Type;
 - (d) Operation Mode (Plying Area);
 - (e) General Arrangement Plan (applicable to vessels required to submit plans for approval, (Ch. II refers)); and
 - (f) Typhoon Mooring Arrangement (applicable to oil carriers, dangerous goods carriers and vessels of length 50 m or above).
- 6.3 It is important that approval for above plans is obtained before commencement of construction. Owners and builders are therefore advised to submit their application well in advance.

CHAPTER II

SURVEY, ISSUANCE OF CERTIFICATE AND PLAN APPROVAL

[0201022]

1 Survey for Issue or Endorsement of Certificate

- 1.1 Except vessels of the types referred to in 1.2 below, every vessel should be surveyed per items as indicated in the tables in section 4 (items marked with '✓') as relevant -
- (a) new vessel: Table 1 (applicable vessels as indicated in the table) and Table 3;
- (b) existing vessel : Table 2 (applicable vessels as indicated in the table) and Table 3.
- 1.2 Vessels of the types referred to in the table below, which are non-mechanically propelled and not fitted with any internal combustion engine onboard, are not subject to any survey:

No.	Class of Vessel	Type of Vessel	Material of Construction	Vessel's L × B numeral ^(Note)
(i)	II	Sampan	any material	≤25
(ii)	II	Cargo Vessel, Hawker Boat	other than steel	≤25
(iii)	III	Fishing Vessel	other than steel	≤25
(iv)	III	Sailing Fishing Vessel	any material	any size

Note : the product of vessel's length L (m) and breadth B (m)

- 1.3 A new Class IV vessel carrying more than 60 passengers should be surveyed in accordance with the requirements of a Class I vessel carrying more than 60 passengers.
- 1.4 A laid-up vessel should be presented for survey before returning to service if the inspection certificate/endorsement previously issued has expired. The survey should include the survey items due in the period as the vessel was not laid up.
- 1.5 When deemed necessary or at his discretion, the attending surveyor/inspector may request any other item to be presented for inspection.

2 Validity of Certificates and Endorsement

The expiry date of the certificate or endorsement should be determined as follows:

No.	Date of Final Survey	Expiry Date of Certificate/Endorsement to be issued
(a)	New vessel	FSD + 12 months (Remark)
(b)	Re-commissioned laid-up vessel	FSD + 12 months
(c)	Existing vessel	
	(i) within two months before CED	CED + 12 months
	(ii) after CED	FSD + 12 months
	(iii) more than two months before CED	FSD + 12 months

Abbreviations

CED = expiry date of existing certificate/endorsement

FSD = final survey date

Remark:

In new vessels required to be surveyed on slip (or in dry-dock), the validity of certificate to be issued should in no case be exceeding 13 months after the date when the hull was last surveyed on slip (or in dry-dock).

3 Surveys conducted by Authorized Surveyor

If the owner or agent wishes his vessel to be surveyed by an authorized surveyor, he should provide the Department,

- (a) prior to the survey - the name of the authorized surveyor, the place and date of the intended survey; and
- (b) on completion of survey - a survey report duly signed and issued by the authorized surveyor (this report may be furnished to the attending surveyor during final survey - item No. 23 in Table 3 refers).

4 Survey Items and Survey Programmes

Table 1 Initial Survey

No	Category of Vessel		A	B
	Survey Item			
1	Mould Loft/GRP Shell Moulding - inspection		✓	✓ (*1)
2	Material test - Steel Plate/GRP Polyester Resin (*2)		✓	✓ (*1)
3	- Propeller Shaft, Coupling, Rudder Stock (*3)		✓	
4	Preparation before welding/Resin to glass ratio of Hull Structural Members (incl. underdeck structure, superstructure, skeg, rudder, kort nozzle, etc.) -inspection		✓	✓ (*1)
5	Hull Scantlings - verification		✓	✓ (*1)
6	Welding / GRP Lamination and Finishing - inspection		✓	✓ (*1)
7	Hose test/Flood test		✓	✓
8	Structural Tanks - internal inspection		✓	✓ (*1)
9	- hydraulic test/air test		✓	✓ (*4)
10	Watertight/weathertight Appliances - inspection		✓	✓ (*1)
11	- hose test		✓	✓
12	Load Line Items - inspection		✓	✓
13	Freeboard Marks - verification		✓	✓ (*1)
14	Structural Fire Protection (Schedule 4, Part 3 of safety survey regulation refers) - inspection		✓	✓
15	Main Engine, Gear Box - Type Approval Certificate (*5)		✓	
16	Tail Shafts and Coupling - verification of dimensions		✓	
17	- taper bedding test		✓	
18	Stern Tube - verification of dimension and hydraulic test		✓	
19	Independent Fuel Oil Tanks - internal inspection and hydraulic test		✓	
20	Fire Main - inspection and hydraulic test		✓	
21	Bilge Line - inspection and hydraulic test		✓	
22	Steering System Hydraulic Line - inspection and hydraulic test		✓	
23	Fuel Oil Line - inspection and hydraulic test		✓	
24	CO ₂ Pipe - inspection, hydraulic test and blowing test		✓	✓
25	Compressed Air Pipe - hydraulic test (for P > 17.2 bar)		✓	✓
26	Air Receiver - verification of wall thickness/dimensions		✓	✓
27	- hydraulic test		✓	✓
28	Prevention of Oil Pollution Installation - inspection		✓	✓

No	Survey Item	Category of Vessel	
		A	B
29	- hydraulic test of bilge water holding tank	✓	✓
30	Electrical Wiring - inspection	✓	✓
31	Generator circuit breaker load test (Class I vessels with genset power > 50 kW)	✓	
32	Position of Navigation Light Seating - verification	✓	✓
33	Minimum headroom in Accommodation Space - confirmation	✓	✓
34	Means of Escape in Accommodation and Machinery Spaces - inspection	✓	✓
35	Draft Marks - verification	✓	✓ (*1)
36	Measurement of Principal Dimensions, Passenger Space/Seating	✓	✓
37	Measurement of Noise Level in Passenger Space (for Class I vessel only)	✓	
38	Inclining Experiment (*6)	✓	✓ (*4)
39	Lightship Verification (*7)	✓	✓ (*4)
40	Simple Inclining Test (for $C_{np} \geq 0.35$ Kaito, prototype vessel of fishing sampan)		✓
41	Rolling Period Test (for Category B dry cargo vessel only)		✓
42	Loading Trial (for new design Hopper Barge only)		✓
43	Towing Test (for Tug only)	✓	
44	Additional Items for Oil Carriers having cargoes $\leq 61^{\circ}\text{C}$ (Schedule 4, Part 3 of safety survey regulation refers) - inspection and test	✓	
45	Ventilation and air conditioning system (Class I vessels--- ---ferries only)	✓	

Remarks in Table 1

- *1 Applicable to dumb lighter, hopper barge and vessel to be issued with Freeboard Assignment Certificate, and prototype vessel of fishing sampan, as appropriate.
- *2 In lieu of the material test, mill sheet issued/endorsed by a classification society is acceptable.
- *3 IIA/Pt 3/9 and IIA/Pt 3/17.4 refer.
- *4 For hopper barge only.
- *5 IIA/Pt 3/7.1 refers.
- *6 Applicable to the 1st vessel of a series of four vessels.
- *7 Applicable to the 2nd, 3rd and 4th of a series of four vessels.

Table 2 Periodical Construction Survey

No	Survey Item	Class/Category/Type of Vessel	Class IA >60 P Vessel			Class I A 13-60 P Vessel, Class II A DG Carrier, Oil Carrier, NLS Carrier			Class IIA, IIIA Vessel			Class I B, II B, III B Vessel		
			1	2	4	1	2	4	1	2	4	1	2	4
1	Hull - external (incl. ship bottom) inspection		✓				✓			✓			✓	
2	- internal (excl. oil, water tanks and void spaces) inspection						✓							
3	- internal (incl. oil, water tanks and void spaces) inspection (*2)			✓				✓			✓			✓
4	- gauging thickness of deck, shell and bulkhead plating (*3)				✓			✓			✓			✓
5	Sea Suctions, Discharging Valves - stripped down inspection			✓				✓			✓			✓
6	Anchors, Cables- ranged out for inspection			✓				✓			✓			
7	Main Engine - hydraulic test of coolers (incl. air, lub. oil, cooling water), cylinder head and water jacket			✓										
8	- overhaul of fuel oil pump, fuel nozzles			✓				✓			✓			
(by engine workshop) (*4)														
9	Main Engine and Gear Box - stripped down for inspection (*5)			✓				✓			✓			
(by engine workshop) (*4)														
10	Generator engine- stripped down for inspection				✓			✓			✓			
(by engine workshop) (*4)														
11	Main fire pump, emergency fire pump, bilge pump, windlass - stripped down for inspection			✓				✓			✓			
12	Air Receiver (P<17.2 bar) - internal inspection				✓			✓			✓			✓
13	- hydraulic test				✓			✓			✓			✓
14	(P≥17.2 bar) - internal inspection			✓				✓			✓			✓
15	- hydraulic test			✓				✓			✓			✓
16	Tail Shaft, Propeller, Rudder and Rudder Stock - drawn out for inspection			✓				✓			✓			

No	Survey Item	Class/Category/ Type of Vessel	Class IA >60 P Vessel			Class I A 13-60 P Vessel, Class II A DG Carrier, Oil Carrier, NLS Carrier			Class IIA, IIIA Vessel			Class I B, II B, III B Vessel		
			1	2	4	1	2	4	1	2	4	1	2	4
17	Oil Pollution Prevention Installation - vessel with HKOPP certificate													
18	- vessel without HKOPP certificate: - hydraulic test of bilge water holding tank			✓			✓				✓			
19	Fixed Fire Ext. Installation CO ₂ system - blowing test Sprinkler System - spraying test		✓				✓				✓			
20	- hydraulic test													
21	Fire Extinguisher, CO ₂ Bottle - refill and hydraulic test	✓ (*8)				✓ (*8)								
22	Buoyant Apparatus - submerging test (*9)			✓			✓							
23	Pump Room - inspection					✓								
24	Cargo Tank Vent Piping System - inspection					✓								
25	Cargo Tank Lids - inspection					✓								
26	AC electrical circuit - main circuit breaker load test			✓ (*12)										

Abbreviations

DG Carrier - dangerous goods carrier
NLS Carrier - noxious liquid substances carrier

Remarks in Table 2

*1 Survey Intervals

- 1 - to be conducted every year
- 2 - to be conducted every two years
- 4 - to be conducted every four years

*2 In inner bottom spaces not provided with access holes, at least 5% of area of the inner bottom plate, in at least five sufficiently scattered locations, should be opened up to facilitate inspection of the inner bottom spaces.

*3 Applicable to vessels of age exceeding 8 years. For vessels possessing International Load Line Certificate the gauging inspections may be arranged when in the renewals of the load line certificate.

*4 Inspection record issued by engine workshop should be submitted for reference.

*5 For a brand new gear box, the strip down inspection should begin from the fourth anniversary the gear box is in service.

- *6 For the renewal of HKOPP certificates, oil pollution prevention installation should be stripped down for inspection.
- *7 Hydraulic test for CO₂ and sprinkler systems should begin from the 10th anniversary the system is in service, and thereafter at intervals of 10 years.
- *8 Inspection for portable fire extinguishers and CO₂ bottles should be in accordance with the following table. The inspection record should be retained on board for examination.

9 l, 45 l Water, Foam, Dry Powder Fire Extinguisher		CO ₂ Fire Extinguisher, CO ₂ Fixed Installation Bottle		
Refill/ Weighting (*a)	Hydraulic Test (*b)	Weighting	Refill	Hydraulic Test (*b)
Owner (*c) /FSIC	FSIC/MD	FSIC/MD	DG Reg 62	DG Reg 66

Abbreviation

- FSIC: Fire Service Installation Contractors registered in the Fire Service Department, or institutions acceptable to the Director
- DG Reg 62: A person holding a Dangerous Goods Licence issued under Reg. 62, Dangerous Goods (General) Regulation
- DG Reg 66: A person approved by Fire Service Department under Reg. 66, Dangerous Goods (General) Regulation
- MD : Marine Department officer

Note

- (*a) The need for refilling should be in accordance with the instruction of manufacturer of fire extinguisher.
- (*b) Intervals of hydraulic test:
 Portable Fire Extinguishers - 4 years
 CO₂ bottles - 10 years
- (*c) MD officers may examine the owner's competence on carrying out the servicing and conduct random checks including function test of the portable fire extinguishers.

- *9 Air case not filled with buoyant materials should be tested for air tightness by submerging in water.
- *10 Applicable to ceremonial boat, dumb lighters and hopper barges only.
- *11 If the hull and machinery installation are inspected by a surveyor of classification society, the inspection reports/certificates issued by classification society should be submitted for record. For Class I category A vessels, dangerous goods carriers, oil carriers and noxious liquid substances carriers MD officer should be invited for each hull external inspection carried out according to classification society's survey programme,
- *12 Applicable to Class 1 Catalogue A vessels fitted with generator of each capacity exceeding 50kW.

Table 3 Final Survey (*1)

No	Survey Items (*2)
1	Life Saving Appliances - inspection and function test
2	Fire Fighting Appliances (incl. CO2 fixed fire extinguishing installation, emergency fire pump) - inspection and function test
3	Navigation Lights and Sound Signals - inspection and function test
4	Watertight/weathertight Closing Appliances (incl. door, ventilator, air pipe, etc.) - inspection
5	Freeboard Mark / Load Line Mark - verification
6	Marking of Safe Working Load and Certificate of Lifting Appliances - verification
7	Passenger Space (incl. escape signs, 'No Smoking' signs, etc.), Crew Space, Escape Arrangement, Bulwarks and Rails - general inspection
8	General condition in Machinery Space <ul style="list-style-type: none"> - protection from injury of personnel - prevention of fire hazard - prevention of oil pollution hazard
9	Main Engines, Generator Engines, Steering Gears - running test
10	Engine Smoke Inspection (*3)
11	Unattended Machinery Space Installation (Ch. IIIA/Pt 3/18 and Ch. IIIB/Pt 3/13 refer) - function test
12	Air Receiver Safety Valves - function test
13	Bilge and Oily Water Pumping System - function test
14	Prevention of Oil Pollution Installation - function test
15	A.C. Electrical Circuit - earthing test
16	- insulation resistance test (*4)
17	Meters, main circuit breaker on Switchboard - function test
18	Domestic L.P.G. Installation - inspection
19	Fire Drill, Abandon Ship Drill (*5)
20	Permanent ballast - confirmation of amount and position
21	Drawings required to be retained onboard - confirmation of numbers and contents (*6)
22	Survey report issued by authorized surveyors - verification
23	Ship Manoeuvring Trial (*7)
24	Operational and Safety Trial (*8)

Remarks in Table 3

- *1 The final survey should be carried out annually except the following types of vessels:
Category B Fishing Vessel, Ice Boat, Fish Drying Hulk, Water Dispensing Boat and Live Fish Dealing Boat:
 - (a) vessels of L x B Numeral not exceeding 25 - triennially
 - (b) vessels of L x B Numeral exceeding 25 - biennially.
- *2 Where practicable the listed items may be presented for inspection prior to the final survey.
- *3 Smoke inspection may be conducted simultaneously with item No. 9.
- *4 Applicable to all vessels other than wooden construction of category B vessels.
- *5 Applicable to launches, ferries, floating restaurants, oil carriers, dangerous goods carriers and noxious liquid substances carriers.
- *6 II/3 refers.
- *7 Applicable to ferry vessels only. The trial should include crash ahead and astern running, turning and windlass operation test.
- *8 Applicable to vessels of the type stated in Chapter I paragraph 4.2.

5 Submission of Plans and Data

- 5.1 Plans and data should be submitted according to the tables in section 2 below for the construction of new vessel and modification of existing vessel.
- 5.2 Plans and data as marked with "MD" should be submitted to the Department for approval (or for record, as specified).
- 5.3 For a vessel classed with a classification society, plans and data as marked with "CS" should be submitted to the relevant classification society for approval. One copy of such approved plans and data should be submitted to the Department for record.
- 5.4 Additional plans and data will be required when deemed necessary.
- 5.5 The approval of plans and data will be valid for one vessel, and for a period of two years after the completion of approval for the relevant construction (in new vessel) or modification (in existing vessel) work.

6 Plans and Data required to be submitted

Plans and Data	Vessel Category		B
	not classed	classed	
GENERAL			
1) General Arrangement	MD	MD	MD (*1)
2) Lines Plan including details of draft marks and offsets tables (for record)	MD	MD	MD (*2)
3) Hydrostatic Curves	MD	MD	MD (*2)
4) Cross Curves of Stability	MD	MD	MD (*2)
5) Preliminary Intact Stability Information	MD	MD	
6) Estimated Damage Stability Information (Ch. IV/2 refers)	MD	MD	
7) Inclining Experiment Report/Rolling Period Test Report	MD	MD	MD (*3)
8) Stability Information Booklet (after inclining experiment)	MD	MD	MD (*3)
9) Damage Stability Calculation (after inclining experiment) (Ch. IV/2 refers)	MD	MD	

Vessel Category	A		B
	not classed	classed	
Plans and Data			
HULL AND SAFETY EQUIPMENT			
1) Midship Sections	MD	CS	MD (*2)
2) Scantling Calculation	MD	CS	MD (*2)
3) Profile, Decks and Bulkheads	MD	CS	MD (*2)
4) Shell Expansion	MD	CS	MD (*2)
5) Rudder/Kort Nozzle, Rudder Stock, Skeg and Sole Piece	MD	CS	
6) Mooring Arrangement and Equipment Number Calculation (for DG carriers and L>50m Dumb steel lighters)	MD	CS	
7) Weathertight/watertight Closing Appliances Arrangement	MD	CS	
8) Structural Fire Protection Arrangement	MD	CS	
9) Materials and Paints Specifications (*4)	MD	MD	
10) Safety Plan showing arrangement of life saving appliances, fire fighting appliances, light and sound signals, means of escape, etc.	MD	MD	MD (*1)
MACHINERY INSTALLATION			
1) Engine Room Arrangement	MD	CS	
2) Pump Room Arrangement	MD	CS	
3) Propeller Shafting, Stem Tube and Coupling	MD	CS	
4) Main Engine and Gear Box Certificates (*5)	MD	CS	
5) Fuel Oil System (incl. tanks, piping)	MD	CS	
6) Fire-fighting Piping Arrangement (incl. fire main, fixed fire extinguishing system)	MD	CS	
7) Bilge Pumping Arrangement	MD	CS	
8) Compressed Air Piping System (for pressure ≥ 10 bar)	MD	CS	MD
9) Air Receiver (Ch. IIIA/15 refers)	MD/CS	CS	MD/CS
10) Steering Gear Hydraulic Piping System	MD	CS	
11) Prevention of Oil Pollution Installation (Ch. IIIA/19 refers)	MD	CS	MD
12) Fresh Water System (incl. tank construction, piping) (*6)	MD	CS	MD

13)	Cargo Tank Venting System	MD	CS	
14)	Mechanical Ventilation and air-conditioning System (*7)	MD	CS	
15)	Domestic LPG Installation (Annex H refers)	MD	MD	MD (*8)
16)	Filing, sounding and air vent system	MD	CS	
Vessel Category		A		< B > (*1)
		not classed	classed	
Plans and Data				
ELECTRICAL INTSALLATION (including Emergency Power System)				
1)	AC Line diagram	MD	CS	MD
2)	Wiring Diagram of Main Switchboard	MD	CS	MD
3)	Layout of Main Switchboard	MD	CS	
4)	Electrical Arrangement	MD	CS	MD
5)	Wiring Diagram of Distribution Boxes	MD	CS	

Remarks in Tables

- *1 Applicable to the following Category B vessels: dumb lighter, hopper barge, water boat, flat top work barge, landing pontoon, separation barge, kitchen boat, ice boat, fish drying hulk and prototype vessel of fishing sampan.
- *2 Applicable to dumb lighters, hopper barges and prototype vessel of fishing sampan.
- *3 For dumb lighters required to be submitted with heavy lifting stability calculations, hopper barges and prototype vessel of fishing sampan.
- *4 Applicable to floating restaurants and ceremony boats.
- *5 Applicable to the following mechanically propelled vessels: launches, ferries, oil carriers, dangerous goods carriers, noxious liquid substances carries, tugs and any Category A vessel plying beyond Hong Kong waters.
- *6 For water boats only.
- *7 For Class I Category A vessels only.
- *8 Applicable to vessels of other than wooden construction.

<7 **Plans to be retained onboard**

- 7.1 Every Category A vessel, dumb lighter, hopper barge, fish drying hulk, water boat, landing pontoon, separation barge, kitchen boat, ice boat, and flat top work barge should be provided onboard one copy of the plan(s) with the following information indicated thereon :
- (a) general arrangement of vessel, with seating arrangement and escape routes if passenger is carried;
 - (b) types and dispositions of life saving appliance and fire fighting appliance.
- 7.2 On every Class I vessel carrying more than 100 passengers, such plans required in section 3.1 with the instructions to be followed in the event of an emergency indicated thereon, should be exhibited in conspicuous places throughout the vessel.>

CHAPTER III A

HULL CONSTRUCTION, MACHINERY, ELECTRICAL INSTALLATIONS AND FITTINGS - CATEGORY A VESSEL

[020819]

PART 1 GENERAL REQUIREMENTS

- (1) Except as otherwise specified every vessel should be designed and built to the requirements of rules and regulations of a classification society as listed at Annex A, having regard the size, construction material, and operational services of the vessel. Such rules and regulations should be complied with in its entirety. However in the case of any inconsistency between this Code and any of the requirements of the classification society rules, the requirements of this Code should be complied with.
- (2) Main propulsion, control, fuel oil, compressed air, electrical and refrigeration systems; generator machinery; air receivers and other pressure equipment; piping and pumping arrangements; steering equipment and gears, shafts and couplings for power transmission should be designed, constructed and tested to the satisfaction of the surveyor. Suitable means or device should be provided to machinery, equipment, lifting gear, winches, fish handling and fish processing equipment, etc. so as to reduce to a minimum any danger to persons on board. Special attention should be paid to moving parts, hot surfaces and other dangers.

PART 2 HULL CONSTRUCTION

1 Main Deck Construction

Every vessel should be fully decked. Sunken deck intended to be used for passenger cabin should have scantlings equivalent to those of main deck, and should be at least 300 mm above the deepest loaded waterline.

2 Bulkheads

- 2.1 Every launch or ferry vessel should be fitted with the following watertight bulkheads:
 - (a) collision bulkhead;
 - (b) fore and end bulkhead of main engine space;
 - (c) when any compartment exceeds 2/5ths of the registered length, an additional bulkhead at an intermediate position unless it meets the relevant damage stability requirements;
 - (d) if the vessel exceeds 24 metres registered length, an aft peak bulkhead unless the engine room is situated at aft end of the vessel.
- 2.2 In double-ended vessels collision bulkheads should be fitted at both ends.
- 2.3 On a motor vessel other than launch and ferry vessel, the dispositions and construction of watertight bulkheads should meet the relevant requirements of classification societies.

- 2.4 Vessels required complying with the provision of the prevention of pollution regulations, the dispositions and construction of bulkheads in such vessels should meet the relevant damage stability criteria.
- 2.5 On all vessels other than wooden vessels, and as far as practicable on wooden vessels, bulkheads should be of watertight construction.
- 2.6 Access openings fitted in watertight bulkheads should be equipped with effective watertight closing appliances.

3 Closing Appliances

- 3.1 On every vessel, air pipes, ventilators, cargo hatchways, small hatchways, manholes, skylights and doors leading to a space below main deck should be fitted with weathertight closing appliance and should have a minimum coaming height as follows:

Plying Limits	Coaming Height (mm)
Hong Kong Waters	230 <300>
River Trade Limits	600

No coaming is required for watertight manholes.

- 3.2 Special consideration may be given to vessel of a design for a particular operation. Such restriction or condition, if any, would be endorsed on the inspection certificate of the vessel.
- 3.3 Sidescuttles below main deck should be of watertight and non-opening type fitted with deadlight.
- 3.4 Vessels issued with Hong Kong Load Line Certificate (HKLLC) or International Load Line Certificate (ILLC) should in addition comply with the relevant requirements on closing appliances prescribed in the load line regulations.

4 Protection of Passengers and Crew

- 4.1 Bulwark, guardrails or equivalent should be installed near the periphery of weather decks accessible to passengers and crew. Storm rails or handgrips should be fitted in passenger standing areas, fixed at deck or at wall.
- 4.2 Bulwarks and rails should have a minimum height of 1000 mm above deck. Where it can be shown that higher rails would interfere with the normal operation of the vessel a reduced height may be accepted. Sufficient freeing ports are to be provided on bulwarks. When guardrails are fitted, the opening below the lowest course of the rails should not exceed 230 mm and the other courses should not be more than 380 mm apart.
- 4.3 Vessels issued with HKLLC or ILLC should in addition comply with relevant requirements on means of protection prescribed in the load line regulations.

5 Flooring

Metallic or wooden flooring, if fitted above bilge, should be readily removable for cleaning and inspection. A steel inner bottom, if fitted, should meet the requirements of classification society rules in respect of double bottom. Access openings and air pipes should be provided for such spaces.

6 Marking of Hull

- 6.1 The certificate of ownership number of a vessel should be marked in accordance with section 14 of the Merchant Shipping (Local Vessels)(Certification and Licensing) Regulation.
- 6.2 On every launches and ferry vessels the name of vessel and the total number of persons (passenger and crew) should be painted on vessel's bows and stern. The minimum size of lettering is 100 mm.
- 6.3 Permanent draft marks should be provided on port and starboard side of stem and stern of a vessel. The marks should be measured from the bottom of the keel, with letters and figures being in decimetric heights and at two decimetric intervals.

PART 3 MACHINERY INSTALLATION

7 Main Engine and Gear Box

7.1 In any

- (a) launch or ferry vessel carrying more than 60 passengers;
- (b) oil tanker;
- (c) noxious liquid substances carrier;
- (d) dangerous goods carrier;
- (e) tug; or
- (f) vessel plying beyond Hong Kong waters

which is not classed with a classification society and has main engine power output exceeding 150 kW, such main engine and its associated gear box should be of a type approved by a classification society or maritime administration.

- 7.2 The main engine and the associated gearbox should be matched at the continuous rating condition.
- 7.3 An used engine, if intended to be installed, should be stripped down for examination.
- 7.4 For main engine and gear box fitted on vessel other than that stated in 7.1 above, documentation provided by manufacturer indicating that the main engines are of marine type is sufficient.

7.5 Any engine fitted on a vessel should be maintained to a condition such that the standard prescribed in Merchant Shipping (Local Vessels) (General) Regulation is met. Any vessel if caught emitting dark smoke in excess of the prescribed limit its engine(s) should be presented for a special inspection.

8 Engine Fittings

8.1 Main engine and generator engine should be provided with effective means of control and indication.

8.2 If remote control of main engine is provided from the wheelhouse, local control should also be provided at engine side.

<8.3 Emergency stopping device for main engine should be provided in wheelhouse. >

8.4 Main engine installed on any

- (a) <launch or ferry vessel carrying more than 60 passengers>;
- (b) <oil tanker carrying cargo oil having a flash point not exceeding 61°C (closed cup test)>;
- (c) <dangerous goods carrier>;
- (d) <noxious liquid substances carrier>;
- (e) <tug>; or
- (f) <Category A vessel that may ply beyond Hong Kong waters>

should be provided with means of protection due to engine faults as follows:

Engine Fault	Means of Protection	
	Audible and Visible Warning Alarm	Automatic Shut-off
Lubrication oil low pressure	✓	
Cooling water high temperature	✓	
Overspeed	✓	✓

8.5 The control for overriding and re-setting of main engine should be fitted at the helmsman's position.

8.6 Engine with cylinder diameter greater than 200 mm or a crankcase volume greater than 0.6 m³ should be provided with crankcase explosion relief valves of approved type. Other engines of smaller size should be fitted with crankcase venting pipe leading to the open deck.

8.7 The engine's exhaust pipe should be lagged with heat-resistant material unless it is served by a water cooling system. A silencer or expansion chamber should be fitted on the exhaust pipe.

9 Propeller Shafting

- 9.1 The diameter of propeller shaft should meet the minimum requirements of the classification society rules. The owner and/or builder of vessel are suggested to consider an allowance for wear down of the shaft. Repair by machining to eliminate defects of the shaft may be permitted, provided the minimum diameter as required by the classification society rules is maintained.
- 9.2 Propeller shaft and its coupling should be physically tested and certificated as follows:

Type of Vessel \ Shaft Diameter	> 75 mm	≤ 75 mm
As stated in section 7.1	MD/CS	manufacturer
Others	manufacturer	manufacturer

MD : Marine Department
CS : classification society

- 9.3 Propulsion systems including shafting of non-conventional type may be accepted if that are of the types approved by classification society.

10 Engine Room

- 10.1 Engine room should be so designed as to provide safe and free access to all machinery and its controls as well as to any other parts which may require servicing.
- 10.2 Adequate ventilation should be provided in engine room. If only natural ventilation is provided, at least two cowl ventilators of adequate size should be fitted. One of the cowl vents should be led well down into the space to vent out the accumulated vapour in the lower part of the space. Ventilation trunk if passing through other compartments should be of watertight or gastight construction, as appropriate. The ventilator should be fitted with damper or other means of closing. The fire damper, if fitted, should be provided with indicator showing its open or close position.
- 10.3 If the vessel is constructed of wooden or GRP of non-oil resistant material, a suitable metal tray which can readily be cleaned should be fitted under the engine to protect the bilges against saturation by oil.
- 10.4 Two means of escape including suitable ladders and exits should be provided for the engine room. One of these means of escape may be waived with regard to the size and disposition of the space. If such means of escape is led to passenger space, it should be clear of any seating.

11 Nature of Fuel

Except otherwise permitted by the Director, marine fuel oil of flash point above 61°C (closed cup test) should be used for engine.

12 Fuel Tanks

- 12.1 The arrangements for filling fuel tanks should be such that oil will not spill or overflow into any compartment of the vessel. Woodwork surrounding the deck filling mouth should be covered with metal piece. No loose can/barrel of fuel oil should be carried on board.
- 12.2 Fuel tanks should be substantially constructed of suitable material and securely fixed in position. The tanks and their connections should be tested by hydraulic pressure to a water head of 2.5 metres, or to the height of the overflow whichever is the greater.

13 Pumping and Piping Arrangement

- 13.1 All fuel oil tank, lubrication oil tank and spaces where flammable gas may collect should be fitted with venting pipes leading to the weather deck. The open end of any oil tank's venting pipe should be fitted with properly secured metallic wire-gauze.
- 13.2 Safe and efficient means of ascertaining the amount of fuel oil in any oil tank should be provided. For sounding pipes, their upper ends should terminate in safe positions and be fitted with suitable means of closure. For glass tube gauges, the glass should be of substantial thickness and protected with a metal case, and fitted with automatic closing valves at both ends. Other means of proven design may be allowed subject to any failure or overfilling of the tank will not permit release of oil from it. Filling pipes should have suitable screwed cap.
- 13.3 Fuel oil pipes, their valves and fittings should be of steel or other equivalent material. Where necessary flexible pipes may be allowed provided such pipes and their end attachments are of adequate strength, made of approved fire-resistant materials or design, to the satisfaction of the surveyor. Pipe joints in general are to be readily accessible. Fuel tank outlet valves should be readily closed from a position outside the space where the tank is situated. An automatic closing drain valve should be fitted at a lower position of fuel oil tank.
- 13.4 Oil pipes, water pipes and engine exhaust pipes should generally not be fitted above and close to electrical distribution board, switchboard, etc. or any hot surface. Should it be unavoidable, suitable protection should be provided. Oil pipes should not be led through any fresh water tank.
- 13.5 A suitable metal tray for collection of leaking oil should be fitted under each valve of oil tanks and filters.
- 13.6 Independently driven fuel oil pump should be provided with -
- (a) a suitable relief valve at discharge side of the pump;
 - (b) a means of stop outside of the space where the pump is situated.

14 Bilge Pumping Arrangement

- 14.1 Every vessel should be provided with a bilge pumping system for pumping out bilge water from any compartment other than oil tanks and water tanks appropriate to the size of vessel as given by classification society rules.

- 14.2 A screw-down non-return valve should be fitted at the following positions in the bilge line:
- (a) bilge valve distribution chests;
 - (b) direct bilge suction; and
 - (c) bilge pump connections to main bilge line.
- 14.3 Bilge pipes should not be led through any fresh water tank. Bilges pipes, if pass through fuel oil, ballast or double bottom tanks, should be of heavy gauge steel construction.
- 14.4 Any bilge pipe piercing collision bulkhead should be fitted with a positive means of closing at the bulkhead with remote control from the working deck with an indicator showing the position of the valve provided that, if the valve is fitted on the after side of the bulkhead and is readily accessible under all service conditions, the remote control may be dispensed with.

15 Compressed Air System

- 15.1 Suitable pressure-relief arrangements should be provided to prevent excess pressure in any part of the compressed air systems.
- 15.2 The starting air arrangements for main engine of a cylinder diameter exceeding 300 mm should be adequately protected against the effects of back firing and internal explosion in the starting air pipes.
- 15.3 The discharge pipes from starting air compressor should be led directly to the starting air receiver. Starting air pipes from air receivers serving main or generator engines should be entirely separate from other services.
- 15.4 Provision should be made to reduce to a minimum the entry of oil into the air pressure systems and to drain these systems.
- 15.5 (a) Construction of air receivers should meet the standard of a maritime administration's national standard or a classification society, and be subject to the approval of the Director. The air receivers are classified according to the following table:

Class I	Class II	Class III
$P > 39.2$	$39.2 \geq P \geq 17.2$	$P < 17.2$
Or $S > 38$	or $38 \geq S \geq 16$	or $S < 16$
Or $T > 350$	or $350 \geq T \geq 150$	or $T < 150$

where P = maximum design or working pressure (bar)
 S = shell thickness (mm)
 T = working temperature ($^{\circ}\text{C}$)

- (b) Class I and II air receivers should be built under the survey of one of the abovementioned maritime institutions, and issued with appropriate certificates. For Class III air receivers, submission of appropriate certificates issued by manufacturer is sufficient.

- (c) Each air receiver should be provided with the following fittings:
 - (i) Stop valve and pressure gauge
 - (ii) Drain device
 - (iii) Safety valve
- (d) The following information should be submitted in duplicate for approval:
 - (i) Body construction (including details of welded connections, attachments, dimensions and supports etc.)
 - (ii) Construction of pressure parts (cylindrical shell, end plates, etc.)
 - (iii) Arrangement of mountings and fittings
 - (iv) Mechanical properties of material
 - (v) Test pressure.

15.6 Every air receiver should be tested at pressure according to the following table:

Type of Construction	Maximum Working Pressure (MWP)	Test Pressure
Riveted or Fusion welded	$MWP \leq 7 \text{ bar}$	$2 \times MWP$
Riveted	$7 \text{ bar} < MWP \leq 20 \text{ bar}$	$1.5 \times MWP + 3.5$
Riveted	$MWP > 20 \text{ bar}$	$MWP + 14$
Fusion welded	$MWP > 7 \text{ bar}$	$1.5 \times MWP + 3.5$

16 Anchors, Cables and Windlass

- 16.1 The sizes of chain cables and anchors should be in accordance with classification society rule requirements prescribed for vessels operating in sheltered waters. Where ropes are proposed instead of chain cables, the ropes sizes and strengths should be equivalent to that of chain cables.
- 16.2 A windlass for recovering the cables and anchors is recommended.

17 Steering System

- 17.1 Every motor vessel should be provided with a main steering gear and an emergency means for actuating the rudder. The main steering gear should be capable of turning the rudder over from 35° on either side to 30° on the other side in not more than 28 seconds, at vessel's maximum service speed. The emergency means may be of powered or manually operated.
- 17.2 Pressure relief valve should be fitted at the hydraulic line.
- 17.3 The position of rudder, if power operated, should be indicated in the wheelhouse. The rudder angle indication for power-operated steering gear should be independent of the steering gear control system.

17.4 Material tests for rudder stocks should be carried out as that for propeller shafts. Rudder stock assembly should be enclosed with efficient watertight glands and packing. Suitable stopping devices are to be provided for the rudder to prevent it from excessive angular motion and vertical jumping.

17.5 The steering system of vessels of the type stated in Chapter I, paragraph 4.2 should comply with the relevant requirements specified in Chapter XI.

18 Wheelhouse - Engine Room Communication

18.1 On any vessel with manned engine rooms, a suitable system of communication between wheelhouse and engine room should be provided.

18.2 Any vessel with length or propulsion power as indicated below, operating in unattended machinery spaces mode should be provided with the following installation in the proximity of the position of helmsman:

(a) Vessel of $L \leq 24$ m or total propulsion power ≤ 750 kW

(i) for main engine-

- (1) means of start, stop and control of speed
- (2) control of gearbox or clutch
- (3) lubricating oil pressure gauges
- (4) < lubricating oil low pressure alarm >
- (5) cooling water pressure gauges
- (6) cooling water temperature gauges
- (7) < cooling water high temperature alarm >
- (8) exhaust temperature gauges (if fitted on the engine)

(ii) for generator engine-
means to stop

(iii) for bilge water in engine room-
high level audible alarm.

(b) Vessel of $L > 24$ m, but ≤ 37 m, or total propulsion power > 750 kW, but ≤ 1500 kW

same as (i) above but in addition, provided with a fixed fire detection (operated by smoke detectors) and fire alarm system for engine room.

(c) Vessel with length $L > 37$ m or total propulsion power > 1500 kW would be specially considered.

19 Installation for Prevention of Oil Pollution

19.1 Vessels to which the requirements of Merchant Shipping (Prevention of Oil Pollution) Regulations and relevant exemption notice apply are summarised in the following table:

Vessel Type	Vessel Category	A		B	
	Propulsion	Mechanically propelled	Non mech. propelled	Mechanically propelled	Non mech. propelled
		Gross Ton	Gross Ton	Gross Ton	Gross Ton
Class I Vessel					
Launch (incl. new Class IV vessel carrying 60 passengers)		≥ 80			
Ferry Vessel		≥ 80			
Floating Restaurant			≥ 80		
Ceremonial Boat			≥ 80		EXm
Primitive Transportation vessel				≥ 400	
Class II Vessel					
Dangerous Goods Carrier		≥ 80	EXm	≥ 400	EXm
Noxious Liquid Substances Carrier		≥ 80	EXm		
Oil Carrier		all tonnage	all tonnage		
Dry Cargo Vessel		≥ 80		≥ 400	
Dumb Lighter (incl. Flat Top Cargo Barge)					EXm
Dredger		≥ 80			
Hopper Barge					EXm
Edible Oil Carrier		≥ 80	EXm		
Water Boat		≥ 80		≥ 400	
Tug		≥ 80			
Transportation Vessel		≥ 80			
Transportation Sampan				≥ 400	
Pilot Boat		≥ 80		≥ 400	

Vessel Type	Vessel Category	A		B	
	Propulsion	Mechanically propelled	Non mech. propelled	Mechanically propelled	Non mech. propelled
		Gross Ton	Gross Ton	Gross Ton	Gross Ton
Class II Vessel (cont.)					
Floating Dock			≥ 80		
Floating Workshop (incl. Repair Pontoon, Welding Barge)		≥ 80	≥ 80	≥ 80	≥ 80
Crane Barge			Exm		Exm
Flat Top Work Barge					Exm
Landing Pontoon					Exm
Separation Barge					Exm
Kitchen Boat			Exm		Exm
Ice Boat					Exm
Fish Drying Hulk					Exm
Water Dispensing Boat					Exm
Live Fish Dealing Boat					Exm
Class III Vessel					
Fishing Vessel		≥ 80		≥ 400	Exm
Fishing Sampan				≥ 400	

EXm: Exempted from the requirements.

- 19.2 The installation and documentation required on board, and information required to submit for approval are detailed in the following table:

Type of Vessel	Oil Carrier (incl. Sludge Oil Carrier)		Vessels other than Oil Carrier	
	GT < 150	GT ≥ 150	80 ≤ GT < 400	GT ≥ 400
Required Installation and Documentation	(c),(f)	(a),(b),(c),(d),(e)	(c),(f)	(a),(b),(c),(d),(e)
Information to be submitted	(i),(k),(l),(m)	(g),(h),(j),(k),(l),(m)	(i)	(g),(h),(j)

Legend

- (a) An approved type oily water separator designed to produce effluent not more than 15 ppm of oil.
- (b) Tank (sludge tank) for oil residue in engine room.
- (c) Standard discharge connection.
- (d) Hong Kong Oil Pollution Prevention Certificate and Supplement issued/endorsed by the Director or International Oil Pollution Prevention Certificate and Supplement issued/endorsed by a classification society.
- (e) Oil record book (Part I and Part II); Vessels other than oil carriers require Part I.
- (f) Bilge water holding tank.

The minimum capacity (V) of the tank is to be determined by the following formula:

$$V = 0.9 P + 50 \text{ litres}$$

where P = total horsepower of main engine(s), in kW.

The above formula is for an interval of discharge of 18 hours. For alternate intervals of discharge, the capacity should be adjusted accordingly.

- (g) Installation plans for oily-water separator consist of:
 - (i) piping arrangements, and
 - (ii) wiring diagram of electrical installation.
- (h) Sludge tank and discharge arrangement plans include:
 - (i) construction, size and location of sludge tank; and
 - (ii) piping diagram of sludge tank from machinery spaces to reception facility via standard discharge connection.
- (i) Bilge water holding tank and discharge arrangement plans include:
 - (i) construction, size and location of bilge holding tank; and
 - (ii) piping diagram of bilge water holding tank from machinery spaces to reception facility via standard discharge connection.
- (j) Shipboard oil pollution emergency plan (not required for sludge oil carriers).
- (k) Cargo oil pump room bilge pumping arrangements.
- (l) Brief description of scheme for cleaning cargo oil tanks.
- (m) Damage stability calculations.

20 Pollution Prevention for Vessels carrying Noxious Liquid Substances

Every vessel carrying noxious liquid substance in bulk shall comply with the relevant requirements of Merchant Shipping (Control of Pollution by Noxious Liquid Substances in Bulk) Regulations, Cap 413 Sub. leg.

PART 4 ELECTRICAL INSTALLATION

21 Electrical Power Source

- 21.1 Nominal voltage of electrical system is recommended to be 380V for generation and power circuits, 220V for lighting and distribution circuits and 24V D.C. for low voltage circuits.
- 21.2 The hull return system should not be used for power or lighting.
- 21.3 An earthed distribution system should not be used on an oil carrier carrying petroleum products or other types of vessel with flammable cargo.
- 21.4 Where electrical power constitutes the only means driving the lubrication oil pump and cooling water pump for the main engine, a main source of electrical power should be provided which should include at least two generating sets, one of which should be driven by internal combustion engine.
- 21.5 The vessel's emergency lighting, navigation lights for vessels of length exceeding 24 metres, fixed fire extinguishing system, fire detection and alarm system and public address system should be provided with emergency power supply of sufficient capacity.
- 21.6 Ventilation fans serving machinery or cargo spaces, and engines' oil fuel pumps and other similar oil pumps should be capable to be stopped outside of the space where the appliance is situated.
- 21.7 Each navigation light should be connected separately to the distribution board served for this purpose.
- <21.8 In every electric or electro-hydraulic power steering gear system on vessel:
- (a) the steering gear should have two independent sets of supply cables connecting direct to main switchboard;
 - (b) the supply circuits of steering gear control system should be provided with short circuit protection only;
 - (c) the steering gear motors should have an overload alarm instead of overload protection. The short circuit protection should be not less than twice the total rated current of the motor in the circuit protected.

This subsection is not applicable to vessels fitted with a separate power-operated means of steering.>

22 Precautions against Shock, Fire and Other Hazards of Electrical Origin

- 22.1 (a) Exposed permanently fixed metal parts of electrical machines or equipment which are not intended to be "live", but which are liable under fault conditions to become "live" should be earthed unless they are supplied at a voltage not exceeding 55 volts.
- (b) Electrical apparatus should be so constructed and so installed that it should not cause injury to person when handled or touched in the normal manner.

- 22.2 Main and emergency switchboards should be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to attendants. The sides and backs and, where necessary, the fronts of switchboards, should be suitably guarded. Exposed "live" parts having voltages exceeding 55 volts should not be installed on the front of such switchboards. There should be non-conducting mats or gratings at the front and rear, where necessary.
- 22.3 The distribution system if exceeds 55V, whether primary or secondary, for power or lighting, with no connection to earth is used, a device capable of monitoring the insulation level to earth should be provided.
- 22.4 (a) The voltage rating of any cable should not be less than the nominal voltage.
- (b) Every conductor of a cable, flexible cable or flexible cord should be capable of carrying the maximum current which will normally flow through it without exceeding the appropriate current rating as specified by manufacturer of the cable.
- (c) Cable runs should be selected so as to avoid action from condensed moisture or drip. Cables should, as far as possible, be remote from sources of heat, such as hot pipes, resistors, etc.
- (d) Cables should be prevented from mechanical damage. When necessary cables should be enclosed in suitable conduits or casings, or armoured cables should be used.
- 22.5 (a) Circuits should be protected against short circuit and overload.
- (b) The current rating of circuit breaker should not exceed the current rating of the smallest size of cable in the circuit protected by the circuit breaker.
- 22.6 Lighting fittings should be arranged to prevent temperature rises which could damage the wiring and to prevent surrounding material from becoming excessively hot.
- 22.7 In spaces where flammable gas mixtures are liable to collect and in any compartment assigned principally to the containment of an accumulator battery, the electrical fittings should be of flameproof type.
- 22.8 (a) The housing of accumulator batteries should be properly stowed in a locker which should be well ventilated.
- (b) Accumulator batteries should not be located in the crew or passenger spaces.
- <22.9 A lightning conductor is recommended to be fitted for a vessel which hull or mast is constructed of nonconductive materials. The lightning conductor might be connected to a copper plate fixed to the vessel's hull well below the light waterline. >

CHAPTER III B
HULL CONSTRUCTION, MACHINERY, ELECTRICAL INSTALLATIONS
AND FITTINGS - CATEGORY B VESSELS

(020819)

PART 1 GENERAL REQUIREMENTS

- (1) Dumb lighter, hopper barge and any vessel required to possess a Hong Kong Load Line Certificate or a Freeboard Assignment Certificate; and fishing sampan should be designed and built to the requirements of the relevant rules and regulations as listed at Annex A, having regard the size, construction material and operational services of the vessel. Such rules and regulations should be complied with in its entirety. However in the case of any inconsistency between this Code and the requirements of the classification society rules, this Code should be complied with. Wooden fishing vessels should be of adequate structural strength appropriate for the sea and weather conditions likely to be encountered in the intended area of operation.

- (2) Suitable means or device should be provided to machinery, equipment, lifting gear, fish handling and fish processing equipment, etc. so as to reduce to a minimum any danger to persons on board. Special attention should be paid to moving parts, hot surfaces and other dangers.

PART 2 HULL CONSTRUCTION

1 Hull and Bulkheads

1.1 A motor vessel other than a fishing sampan should be fitted with:

- <
- (a) collision bulkhead (for vessels of other than wooden vessels and of length exceeding 7 m); >
 - (b) machinery space fore bulkhead; and
 - (c) machinery space aft bulkhead, unless the machinery space is situated at aft end of the vessel.

In vessels of other than wooden vessels, and as far as practicable on wooden vessels the bulkheads should be of watertight construction.

- <
- Access opening fitted in a watertight bulkhead should be equipped with effective watertight closing appliance. No opening is to be fitted in collision bulkhead on vessels of other than wooden construction. >

1.2 A fishing sampan should have:

- (a) deck from stem to stern;
- (b) 100% built-in buoyancy (at vessel's fully loaded condition) or the underdeck compartments be filled with non-flammable polypropylene foam; and

- (c) fitted with superstructure or erection enabling the proper display of navigation lights.

2 Closing Appliances

The air pipes, ventilators, cargo hatchways, small hatchways, manholes and doors which are leading to a space below main deck should be fitted with closing appliance and should have a minimum coaming height of 230 or <300> mm on every vessels of-

- (a) vessel of other than wooden vessel not in possession of a Freeboard Assignment Certificate; or
< (b) wooden vessel plying beyond Hong Kong waters >

2.2 No coaming is required for watertight manholes.

3 Means of Protection

III A/Pt 2/4 refer.

4 Flooring

III A/Pt 2/5 refers.

5 Marking of Hull

5.1 For vessels of all kinds of construction, III A/Pt 2/6.1 refers.

<5.2 Every steel fishing vessel and vessel assigned with a freeboard in compliance with requirement of IV/1.1 should provide with draft marks per requirements of III A/Pt 2/6.3>.

PART 3 MACHINERY INSTALLATION

6 Main Engine and Engine Fitting

6.1 The engine's exhaust pipe should be lagged with heat-resistant material unless it is served by a water cooling system. A silencer or expansion chamber should be fitted on the exhaust pipe. <Main engine crankcase should be fitted with venting pipe leading to the open deck>.

6.2 The maximum horsepower of main engine to be installed on fishing sampans should not exceed that indicated in the following table:

Length of Vessel (L)	Maximum Horsepower (BHP)
L < 6 m	40
6 m ≤ L < 15 m	90

7 Engine Room

- 7.1 Adequate ventilation should be provided in engine room. If only natural ventilation is provided, at least two cowl ventilators of adequate size should be fitted.
- 7.2 If the vessel is of wooden construction, a metal tray, which can readily be cleaned, should be fitted under the engine to protect the bilges against saturation by oil.

8 Nature of Fuel

III A/Pt 2/11 refers.

9 Positioning and Construction of Fuel Tanks

- 9.1 The arrangements for filling fuel tanks are to be such that oil will not spill or overflow into any compartment of the vessel. Woodwork surrounding deck-filling mouth should be covered with sheet metal. No loose can/barrel of fuel oil is to be carried on board.
- 9.2 Fuel tanks should be substantially constructed of suitable material and securely fixed in position.
- 9.3 On fishing sampan the fuel oil tank may be of portable plastic tank approved by engine manufacturer. The total fuel oil carried by such vessel should not exceed 50 litres.

10 Pumping and Piping Arrangement

IIIA/Pt 3/13 refers.

11 Bilge Pumping Arrangement

A hand or electrical operated bilge pump of sufficient capacity should be fitted for pumping out water in the bilge. On dumb lighters, a portable type submerged pump is accepted for the purpose.

12 Compressed Air System

IIIA/Pt 3/15 refers.

13 Wheelhouse - Engine room Communication

IIIA/Pt 3/18 refers.

14 Oil Pollution Prevention Installation

IIIA/Pt 3/19 refers.

PART 4 ELECTRICAL INSTALLATION

15 Electrical Installations

IIIA/Pt 4 refers.

CHAPTER IV

FREEBOARD AND STABILITY

[020419]

1 Freeboard Assignment, Certification, Intact Stability

1.1 The freeboard assignment, certification and stability requirements for a vessel should be according to the following table, unless an International Load Line Certificate has been issued to the vessel:

Vessel Type and Plying Limits	Length (L)	L ≥ 24 m		L < 24 m	
	Requirement	Freeboard, Certification	Stability	Freeboard, Certification	Stability
Class I Vessel (plying solely within HKW)					
Launch, Ferry ≤ 100 passengers		L&FV	GM ≥ 0.3m + Crowding + Turning	L&FV	GM ≥ 0.3m + Crowding + Turning
	> 100 passengers	L&FV	IMO + Crowding + Turning + Wind Mt	L&FV	IMO + Crowding + Turning + Wind Mt
Primitive Transportation Vessel (katio) 0.35 < C _{np} ≤ 0.85 vessel (*1)		L&FV	GM ≥ 0.3m + Crowding + Turning	L&FV	< Simple Inclining Test (*2) >
Class II Vessel					
Dangerous Goods Carrier) Noxious Liquid Subst. Carrier) Oil Carrier) Motor HKW RTL Dumb HKW RTL		HKLLC	IMO	FAC	IMO
		HKLLC	IMO	not permitted	-
		FAC	IMO	FAC	IMO
		FAC	IMO	not permitted	-
Motor) Category A Dry Cargo Vessel) Dredger) Edible Oil Carrier) Water Boat) HKW RTL		HKLLC	IMO	<FAC>	MDN (*3) < GM ≥ 0.3m (*4) >
		HKLLC	IMO	not permitted	not permitted

Vessel Type and Plying Limits	Length (L)	L ≥ 24 m		L < 24 m	
	Requirement	Freeboard, Certification	Stability	Freeboard, Certification	Stability
Class II Vessel (cont.)					
Category B Dry Cargo Vessel					
HKW		<FAC>	MDN (*3) <GM ≥ 0.3m (*4) >	<FAC>	MDN (*3) <GM ≥ 0.3m (*4) >
RTL		<HKLLC>	<IMO>	not permitted	not permitted
Dumb Lighter (incl. Flat Top Cargo Barge)					
HKW		FAC	<H Wt>	FAC	<H Wt>
RTL (*5)		FAC	<H Wt>	not permitted	-
Edible Oil Carrier					
HKW		FAC	IMO	FAC	IMO
RTL (*5)		FAC	IMO	not permitted	--
Hopper Barge					
HKW		FAC	Spill	FAC	Spill
RTL (*5)		FAC	Spill	not permitted	--
Tug					
HKW	)	L&FV	Tow	L&FV	Tow
RTL	)		+ IMO		+ IMO
Transportation Boat, Pilot Boat operating solely within HKW	) ) )	L&FV	GM ≥ 0.3m	L&FV	GM ≥ 0.3m
Floating Dock operating solely within HKW		HKLLC	IMO		
Crane Barge operating solely within HKW (*5)		CB FB	H Wt	CB FB	H Wt
Class III Vessel					
Category A Vessel		-	IMO (*6)	--	IMO (*6)
Fishing Sampan				Turning	Simple Inclining Test (*7)

Abbreviations

HKW - Hong Kong waters
RTL - River Trade Limits

Remark

- *1 V/3 refers.
- *2 Annex E, Part 1 refers.
- *3 Refer to requirements stipulated in Marine Department Notice No. 60/1998.
- *4 To be determined by a rolling period test (Annex E, Part 2 refers) in the anticipated worst loading condition.
- *5 Operate in favourable weather conditions only.
- *6 The stability should be sufficient for the designed freeboard at fully loaded condition.
- *7 Required for vessels intended to be used for carrying fish as cargo.

Legend

Freeboard Requirements

L&FV A freeboard assigned appropriate to the length of vessel according to the following table:

Length (L)	L ≤ 6 m	L = 19 m	L ≥ 50 m
Freeboard (mm)	380	760	1100

Freeboard of intermediate length should be obtained by interpolation.

HKLLC The freeboard assignment and stability requirements should be in accordance with Merchant Shipping (Safety)(Load Line) Regulations 1991, and the amended.

Upon the prescribed requirements are complied with the vessel should be issued with a Hong Kong Load Line Certificate.

FAC Assignment of following freeboard, appropriate to the length of vessel as follows -

Length	Freeboard (mm) (Remark i)	
	Oil Carrier (Remark ii), Hopper Barge (Remark iii)	Other Vessels
up to 30 m	380	530
40 m	500	650
50 m	660	710
60 m	850	1000
70 m	1080	1230
80 m	1330	1480
90 m	1600	1750

Freeboard of intermediate lengths should be obtained by interpolation.

Remark:

- (i) Where the height of coaming for openings leading to below deck space is less than 600 mm, the above freeboard shall be increased by 12.5 mm for each 25 mm that is below 600 mm in height. But in no case the coaming height is less than 300 mm.
- (ii) This includes vessels having cargo tanks with small openings closed by steel watertight cover.
- (iii) Vessels with bottom door which can be opened to the sea.

Freeboard marks shall be marked in accordance with Annex B of this code.

Upon the prescribed requirements are complied with the vessel shall be issued with a Freeboard Assignment Certificate.

CB FB For crane barge, the freeboard fore and aft throughout the lifting operations (whether with or without counterballasting capability) should not be less than 0.5 m.

Intact stability requirements in all probable loading conditions of vessel

GM \geq 0.3 m the transverse metacentric height (GM_T) should not be less than 300 mm.

Crowding Crowding of passengers –

the angle of heel due to the effect of crowding of passengers should not be greater than 10° or 80% of the angle of deck edge immersion, whichever is lesser. The passengers should be assumed to be congregated at 0.25 m² per person on the uppermost deck(s), with 2/3 of the passengers distributed on one side of the vessel and 1/3 on the other side. The vertical centre of gravity of each person should be taken as a standing passenger.

Turning Turning moment of vessel -

- (i) In Class I vessels the angle of heel due to the effect of turning the vessel should not exceed 10° or 80% of the angle of deck edge immersion, whichever is lesser.
- (ii) In Fishing Sampan when plying at the maximum operation speed, the angle of heel due to the effect of turning the vessel should not exceed 8° or 80% of the angle of deck edge immersion, whichever is lesser; and the angle of trim should not exceed 4°.

The heeling moment developed due to the effect of turning of the vessel may be derived from the following formula (for the ratio of the radius of the turning circle to L_{wl} is 2-4):-

$$M_R = 0.196 V_o^2 \Delta \text{ KG/L}_{wl}$$

where

M_R = heeling moment (kN-m)

V_o = speed of the vessel in the turn (m/sec)

L_{wl} = length of vessel on the waterline (m)

Δ = displacement (tonne)

KG = height of the centre of gravity above keel (m)

Wind Mt Wind moment –

as calculated under the "Intact Stability Criteria for Passenger and Cargo Ships" published by IMO in respect of wind moment effect. The wind pressure factor should be taken to be 250 Pa or <500 Pa>.

IMO IMO Recommended Stability Criteria

- (1) the GM_T should not be less than 0.15 metres,
- (2) the area under the curve of the righting levers (GZ curves) should not be less than:-
 - (i) 0.055 m-rad up to an angle of 30°;
 - (ii) 0.090 m-rad up to an angle of either 40° or the angle at which the lower edges of any openings in the hull, superstructures or deckhouses, being openings which cannot be closed weathertight, are immersed if that angle be less;
 - (iii) 0.030 m-rad between the angles of heel of 30° and 40° or such referred to in ii) above;
- (3) the righting lever (GZ) should be at least 0.20 metres at an angle of heel equal to or greater than 30°; and
- (4) the maximum righting lever (GZ_{max}) should occur at an angle of heel not less than 25° but preferably over 30°.

Vessels of the type stated in Ch. I/4 (c) should comply with the relevant requirements specified in Chapter XI.

Tow Towing Stability

A vessel permitted to tow should conform to the following criteria:

$$GM_T = \frac{P \times h}{110 \times \Delta \times F/B} \quad (\text{metres})$$

where

P = total brake power of main engines (kW)

h = vertical distance between top of towing point to centre of propeller (m)

Δ = displacement (tonnes)

F = freeboard (m)

B = maximum breadth (m)

Spill 'Spill out' Method

Annex C of this Code refers. The standard applies to all types of hopper barges regardless of bottom door being fitted.

The maximum volume of cargo that can be carried should be determined by dividing the total cargo deadweight by the anticipated maximum saturated cargo stowage rate which is normally $0.45 \text{ m}^3/\text{t} \sim 0.53 \text{ m}^3/\text{t}$. If these calculations show that in event of the maximum volume of cargo is not completely filled but the vessel is at the assigned freeboard, spillways may be introduced.

H Wt Stability when lifting and/or carrying containers

(a) A vessel equipped with lifting appliances to lift cargo or other heavy objects, during lifting operations if a maximum heeling moment due to the total hook load(s) is equal to or greater than -

$$0.21 \times \Delta \times GM_T \times F / B \quad (\text{m-t})$$

where

- Δ = displacement (tonnes)
- GM_T = metacentric height (m)
- F = freeboard (m)
- B = maximum breadth (m)

is expected, should comply with the criteria prescribed in Annex D.

(Note: the values of Δ , GM_T and F should be taken at the condition the vessel has the maximum hook load).

The operation of lifting very heavy loads should be carried out only in favourable weather conditions.

(b) A vessel should have a GM_T of not less than 300 mm when carrying containers of more than 4 stacks.

1.2 Determination of minimum freeboard

A vessel should meet the relevant stability criteria for the draught corresponding to the freeboard assigned.

1.3 Equivalent freeboard and stability criteria

Where it is not practical for any particular vessel, due to the design and operating condition, to fully comply with the stipulated freeboard or stability criteria, the Department may permit the application of equivalent criteria which are at least as effective as that so specified.

2 Damage Stability

- 2.1 Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in Annex F of this Code.
- 2.2 Vessels of the type stated in Chapter I paragraph 4.2 should comply with the relevant requirements specified in Chapter XI.
- 2.3 Every oil carrier or noxious cargo carrier should meet the damage stability criteria prescribed in the relevant prevention of pollution regulations.

3 Inclining Experiment

- 3.1 With the exception of a vessel which stability is to be determined by a rolling period test, every vessel which stability information is required as stated in section 1 should be inclined to confirm the vessel's displacement, vertical centre of gravity (V.C.G.) and longitudinal centre of gravity (L.C.G.) in lightship condition when on completion or close to completion of construction (new vessels) or modification (existing vessels). Inclining experiment report should be submitted for approval.
- 3.2 Dispensation with conducting an inclining experiment may be given to -
 - (a) a vessel having been carried out a satisfactory lightweight survey (see section 4 below) and being similar in all respects to the sister ship for which a satisfactory inclining experiment report is available; or
 - (b) a vessel in which an accurate result cannot be obtained due to the particular design of hull form (e.g. a dumb lighter with extreme beam), provided a detailed assessment of vessel's displacement and V.C.G. in lightship condition to be submitted.

4 Lightweight Survey

- 4.1 A lightweight survey report including the calculation of the lightship displacement and L.C.G. of the vessel should be submitted for approval.
- 4.2 If the results of the lightweight survey are found not acceptable, an inclining experiment should be conducted.

5 Determination of Deadweight and Its Effects

- 5.1 The deadweight should comprise the following items:
 - (a) full number of passengers and crew;
 - (b) full load of cargo;
 - (c) fuel tanks and fresh water tanks, filled to 96% full and 100% full respectively; and
 - (d) consumable stores.

5.2 The following information should be used for the consideration of the effects of passenger and crew weight:

- (a) the distribution of passengers is 4 persons per square metre;
- (b) each person has a mass of 68 kg or <75 kg>;
- (c) V.C.G. of seated passengers is 0.3 m above seat;
- (d) V.C.G. of standing passengers is 1.0 m above deck;
- (e) passengers and luggage should be considered to be in the space normally at their disposal.

6 Stability Information Booklet

6.1 After inclining test or lightweight survey, a stability information booklet (for each vessel) should be submitted for approval.

6.2 The booklet should include the vessel's following particulars:

- (a) name, principal dimensions;
- (b) general arrangement showing names of all compartments;
- (c) the capacity and the centre of gravity (longitudinally and vertically) of every compartment available for the carriage of cargo, fuel, water, water ballast, etc.;
- (d) the estimated weight and the disposition and centre of gravity of deck cargo;
- (e) hydrostatic particulars, cross curves;
- (f) calculation of loading and righting levers (GZ) curves of light condition, fully loaded (to the assigned freeboard) condition and probable worst conditions.

6.3 The approved stability booklet should be placed on board the vessel for the reference of the coxswain.

7 Permanent Ballast

7.1 When ballast is required to improve stability of the vessel, the correct quantity of ballast should at all times be stowed at the specified position. Such quantity and position of permanent ballast should be endorsed in the Certificate of Survey.

8 Lashing of Cargo

8.1 In cargo hold and cargo space on deck, appropriate lashing gear and fittings should be provided to prevent the cargo from sliding or tipping. These gear and fittings should be regularly maintained and inspected.

9 Modification onboard

9.1 Before a vessel is to undergo any modifications, application should be submitted specifying the nature of the proposed alternations. Stability estimates for the modifications may be required to submit for approval.

9.2 If the stability estimates show that the alterations will adversely affect the stability of the vessel, a lightweight survey, or an inclining experiment, or a rolling period test, as appropriate, should be conducted.

CHAPTER V
PASSENGER AND CREW ACCOMMODATION

[020819]

1 General Requirements

- 1.1 In every vessel the spaces allocated for passengers and crew should be -
- (a) constructed properly;
 - (b) protected from sea and weather;
 - (c) minimum 1.85 metres clear headroom above deck covering or stair tread;
 - (d) well lighted and ventilated ; and
 - (e) maintained in a clean and habitable condition.
- 1.2 Any deck or bulkhead, or part of a deck or bulkhead, which separates a passenger or crew space from any engine room, machinery space, paint room, galley, or spaces used for the storage of flammable oils, should be of gastight construction. There should not be manhole or opening in passenger spaces leading to the oil fuel bunker.
- 1.3 Toughened safety glass should be used for window, the thickness should meet the requirements of a classification society rules.

2 Deck Areas Disallowed as Passengers Spaces

- 2.1 The following spaces should not be used as passenger space:
- (a) any compartment below main deck except on a sunken deck meeting the requirements of IIIA/Pt 2/1;
 - (b) the areas forward of collision bulkhead or abaft rudder stock on main deck;
 - (c) the areas forward of the wheelhouse on the same deck, and the portion of a compartment or of a deck used for the purpose of navigation;
 - (d) within one metre (1 m) distance of deck machinery (such as windlass);
 - (e) machinery compartments, casings and skylights;
 - (f) decks or part of a deck set apart exclusively for the carriage of motor vehicles, luggage, etc.;
 - (g) stairways (including stairway landings), hatchways and ventilators;
 - (h) areas permanently occupied by equipment, fittings (such as inflatable liferaft, hatch, ventilation trunking, etc.);
 - (i) crew spaces;
 - (j) sanitary spaces, galley/pantry and any other service spaces;
 - (k) spaces not covered;

- (i) spaces where noise level exceeds 85 dB(A), measured at maximum operating speed of propulsion engines.

2.2 A guidance plan showing areas to be excluded for measuring passenger space is at Annex G.

3 Maximum Carrying Capacity and Seating

3.1 The maximum number of passengers which may be carried in any vessel other than primitive transportation vessel (kaito) should be determined having regard to the clear space properly available in such vessels and to the following scales:

- (a) Launch, Ferry Vessel and mechanically propelled Class II vessels

passengers no. = the number of fixed passenger seats provided onboard.

The measurement of passenger seating should be guided by the method given on the plan at Annex G;

- (b) Floating Restaurant

passengers no. = the total areas of clear space (m²) divided by 1.1.

<3.2 The maximum carrying capacity (including passengers and crew) in any primitive transportation vessel (kaito) of single deck should be determined by the following formula:

$$\text{Total No. of passenger + crew} = L \times B \times C_{np}$$

where C_{np} is determined as follows:

- (a) $C_{np} = 0.35$ if no simple inclining test is carried out;

- (b) $C_{np} = 0.35 \sim 0.85$, subject to -

(i) a simple inclining test is demonstrated and found satisfactory;

(ii) the vessel is only operated in favourable weather conditions.>

The carrying capacity of primitive transportation vessels (kaitos) with more than one deck should be specially considered depending on the situation.

3.3 The form, design and attachments to the deck of passenger seats should be adequate for the intended service. The seating construction and safety belts on vessels of the type stated in I/4 (c) should comply with the relevant requirements specified in Chapter XI.

4 Stairway, Passageway, Door and Exit in Passenger Space

4.1 Every stairway should -

- (a) have aggregate clear width not less than 10 mm for each person appropriate to the space or the evacuation route it is intended to serve, but in no case should be less than 600 mm or <800 mm> in width. A smaller width may be acceptable for a short stairway. The width should be measured on a tread and within the sides

unless the handrails encroach on the tread, in such case, the width of the stairway should be ascertained by measuring the distance between the handrails;

- (b) have the angle from the vertical not less than 37° ;
- (c) have a rise not less than 200 mm and not more than 225 mm. The tread should be determined by the angle and the rise of the stairway but in no case less than 150 mm;
- (d) be fitted with continuous handrails at a vertical height of not less than 850 mm above the treads and adequately supported at each side of the stairway and the landing. Where the width of any stairway exceeds 1.6 m, intermediate rails should be fitted not less than 0.8 m and not more than 1.6 m apart;
- (e) have an additional rail fitted below each handrail, if the sides of any stairways are not bound by bulkheads;
- (f) have landings fitted at both ends of each flight of stairs. The width of each landing should be at least as wide as the stairway and the length should not be less than 800 mm.

4.2 Passageways

4.2.1 Except as otherwise provided in 4.2.2, the clear width of every passageway in way of the escape route should be at least as wide as the required width of the stairway.

4.2.2 Where passenger seatings are arranged transversely in rows, there should be at least a longitudinal passageway of width not less than 800 mm. Where the seatings are facing the passageway, the width of the passageway should not be less than 600 mm or $\langle 800 \text{ mm} \rangle$.

4.3 Doors and exits

4.3.1 The clear width of every door, hinged or sliding, in way of the escape route from an enclosed space, should be at least as wide as the required width of the passageway or stairway.

4.3.2 The opening direction of doors of enclosed passenger spaces should be such that it would not obstruct the route of escape. The doors should not be capable of being locked during the voyage.

5 Ventilation, Lighting, Deck Sheathing and Insulation in Passenger Space

5.1 Ventilation

5.1.1 Every enclosed space should be provided with a ventilation system which can be a mechanical or natural system.

5.1.2 When a natural ventilation system is installed, the system should meet the following requirements :-

- (a) the inlet ventilator which is situated in the open air should be of a cowl or other equally efficient type and should be arranged in such positions so as to ensure

proper intake of fresh air;

- (b) the aggregate sectional area of the natural ventilation system serving each passenger space should be at least 0.006 m^2 per person for as many persons as are likely to use the space at any one time.

<5.1.3 When a mechanical ventilation system (including an air conditioning system) is provided, the system should be

- (a) capable to provide a minimum air change rate of 15 times per hour; and
- (b) run in at least two parallel sub-systems, so as to reduce the risk of a complete break down of the system, unless a separate natural ventilation system of aggregate sectional area of 50% of that required in 5.1.2 (b) is provided.>

5.2 Lighting

All accommodation spaces should be sufficiently lighted by day and night.

5.3 Deck covering

Every deck in any part of the accommodation space should have a surface which provides a good foothold and can be easily kept clean. Any deck covering and wooden deck should be impervious to water and, if the deck is directly over an oil tank, impervious to oil.

5.4 Heat Insulation

Every deck, which forms the crown of any part of enclosed accommodation spaces and is exposed to the weather should be -

- (a) insulated on its underside with insulation materials which do not readily ignite and are not injurious to health; or
- (b) covered on its upper side with wood.

6 Sanitary Apparatus

6.1 Sanitary apparatus should be provided on vessels for the use of passengers.

6.2 Launches and ferry vessels carrying more than 60 passengers should be provided with sanitary space solely for the use of passengers. Such sanitary spaces should conform to the following requirements -

- (a) it should be of adequate size and be so arranged as to permit unobstructed access and to ensure the user's privacy;
- (b) bulkheads exposed to weather should be constructed of steel or other suitable materials, and should be of weathertight construction. Interior bulkheads which separate from other part of the vessel should be of gastight construction. Self-closing door should be fitted;

- (c) floor deck should be covered with terrazzo, tiles or other hard materials impervious to liquids and should provide a good foothold;
- (d) a hand rail or grip should be provided for each water closet and urinal;
- (e) it should be sufficiently lighted and be adequately ventilated to remove odour to open air;
- (f) efficient means should be provided at the discharge outlet to prevent it from the accidental admission of water.

7 Public Address System

7.1 A public address system should be provided on every Class I vessel which -

- (a) carries more than 100 passengers, or
- (b) passengers are accommodated in more than one deck

7.2 The system should cover areas where passengers and crew have access and escape routes; and should be such that a flooding or fire in any compartment does not render other parts of the system inoperable. < The system should be fitted with 'talk-back' facility.>

8 Boarding Facility On Ferry Vessel

8.1 A proper gangplank should be provided for the safe embarkation and disembarkation of the passengers.

8.2 It is recommended that facility to be provided for the disables to embark and disembark, and stay safely in the vessel.

9 Marking in Passenger Space

9.1 On every launch or ferry vessel the number of passengers which each deck can accommodate should be indicated, in a conspicuous location at all places where passengers will be embarking, in Chinese and English:-

Upper Deck	xxx
Main Deck	xxx
etc.	xxx

Maximum Number of Passengers	xxx

9.2 Evacuation routes, exits and lifejacket stowage should be clearly marked.

CHAPTER VI

FIRE PROTECTION

(020819)

<1 Acceptance of Appliances

Fire fighting appliances and structural fire protection items should be of approved types. Appliances approved by the maritime administration of a convention country or classification society in accordance with the recommendations of the International Maritime Organization are acceptable. >

2 General Requirements for Fire Fighting Appliances

2.1 Fire Extinguisher

2.1.1 Each type of fire extinguishers should have a minimum capacity as shown in the following table:

Media	Capacity	
	Portable Type	Non-Portable Type
Foam	9 l	45 l
CO ₂	3 kg	16 kg
Dry Powder	4.5 kg	
Water	9 l	

2.1.2 Fire extinguishers to be used for switchboard, control panels, batteries, etc. should be of the type suitable for electrical fires, e.g. dry powder or CO₂ fire extinguisher.

2.1.3 Fire extinguishers to be used for machinery spaces should be of the type suitable for oil fires, e.g. foam, dry powder or CO₂ fire extinguisher.

2.1.4 Portable extinguishers are to be suitably distributed throughout the protected spaces. Normally at least one should be stowed near the entrance inside that space.

2.1.5 The use of CO₂ fire extinguisher in a confined space is not recommended.

2.2 A manually operated pump should be capable of producing a jet of water having a throw of not less than 6 m from nozzle.

2.3 Fire Main

2.3.1 In every oil carrier, isolation valves should be fitted in the fire main at house front in a protected position and on the tank deck at intervals of not more than 40 m to preserve the integrity of the fire main system in case of fire or explosion.

2.4 Hydrant, Hose, Nozzle

- 2.4.1 Hydrants should be positioned as to allow at least one jet of water from a single prescribed length of fire hose to reach any part of the vessel normally accessible during navigation. If only one hydrant is provided for engine room it should be located outside of the space and near the entrance.
- 2.4.2 Except otherwise specified, at least one hose and one nozzle should be provided for every hydrant.
- 2.4.3 Except where hoses and nozzles are permanently attached to the fire hydrant, the couplings of hoses and nozzles should be of quick connection type.
- 2.4.4 The nozzles should be appropriate to the capacity of the fire pumps fitted, but in any case should have a diameter of not less than 12 mm in the case of power pump, and 9 mm in the case of manual pump.

2.5 Fireman's Outfit

- 2.5.1 A fireman's outfit should consist of protective clothing, boots, gloves, helmet, electric safety lamp, axe, breathing apparatus of either air hose type or self-contained compressed-air-operated type and lifeline.

2.6 Ready availability and Maintenance of Appliances

- 2.6.1 Fire fighting appliances should be kept in good order and available for immediate use at all times.

CHAPTER VII

LIFE SAVING APPLIANCES AND ARRANGEMENTS

[0208:9]

1 General

- <1.1 Life saving appliances should be of approved types. Appliances which conform to the International Life Saving Appliances (LSA) Code, adopted by the Maritime Safety Committee of IMO by resolution MSC.48(66) and approved by the maritime administration of a convention country or a classification society are acceptable. >
- 1.2 Very high frequency (VHF) radio equipment should be of a type approved by Office of the Telecommunications Authority, Hong Kong.
- 1.3 'SOLAS B Pack Liferafts' are the liferafts provided with normal equipment prescribed by the abovementioned LSA Code less the following equipment:
- (a) half number of rocket parachute flares, hand flares and buoyant smoke signals;
 - (b) tin openers;
 - (c) fishing tackles;
 - (d) food ration;
 - (e) water tank; and
 - (f) graduated drinking vessels.
- 1.4 One lifebuoy is deemed to support two persons.
- 1.5 Each of the buoyant lifelines, self-igniting lights and self-activating smoke signals required to be provided by the Regulation should be attached to a lifebuoy and be placed in proximity of the vessel's both sides. The buoyant lifeline should be at least 30 metres in length.
- 1.6 Lifebuoys should be marked with the name or Certificate of Ownership number of the vessel on which they are carried, on both sides of lifebuoy.
- 1.7 On vessels plying in waters beyond Hong Kong, the lifejackets and lifebuoys should be fitted with the following:
- (a) for lifejacket : lifejacket light, whistle and retro-reflective tape
 - (b) for lifebuoy : retro-reflective tape.
- 1.8 Donning instructions should be posted at suitable positions in the vessel.

2 Stowage of Appliances

- 2.1 Life saving appliances should be stowed so as to be readily accessible to all persons on board.

- 2.2 Lifeboats, liferafts and buoyant apparatus should be stowed so as to be readily for launching. When required a launching cradle should be fitted to facilitate launching into the water.
- 2.3 Liferaft or buoyant apparatus should be stowed so as to be transferable to the water on either side of the vessel for launching, and be provided with a float-free arrangement.
- 2.4 Liferafts should be stowed with its painter attached to a fixed point on the vessel.
- 2.5 Lifebuoys should be distributed on both sides of the vessel. They are to be placed in racks unsecured to allow being float-free.
- 2.6 Lifejacket should be evenly distributed according to the disposition of persons on board, and stowed in racks or under seats with clear marking. If the lifejackets are to be kept in some form of container, attention should be paid that it will not cause danger to the passengers or obstructions of the escape routes when in emergency.
- 2.7 Where spare lifejackets are required, they should be stowed in or adjacent to wheelhouse and machinery spaces where persons are required to remain on duty.
- 2.8 Rocket parachute flares should be contained in a water-resistant casing and stowed in the wheelhouse.

3 Maintenance of Appliances

- 3.1 All life saving appliances should be maintained in working order and ready for immediate use.
- 3.2 Surveys of inflatable liferafts and the hydrostatic release units should be carried out at intervals of not more than 12 months, or a period as permitted by the Director.
- 3.3 Pyrotechnic distress signals should be replaced after the expiry date.

CHAPTER VIII

LIGHTS, SHAPES AND SOUND SIGNALS

[020827]

1 General

- 1.1 Lights, shapes and sound signals provided for navigational purpose shall be in accordance with the provisions of the Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations, which gives effect to the International Regulations for Preventing Collisions at Sea 1972 (COLREG), as amended.
- 1.2 All lanterns and sound signals should be of the type approved/certified by this department or Maritime Administration of a convention country.
- 1.3 Where applicable special signals as required in the 'International and Hong Kong Port Signals' shall be exhibited.

2 Definitions

For the purpose of this chapter, except where the context otherwise requires:

- (a) The words "length (L)" and "breadth" of a vessel mean her length overall and greatest breadth.
- (b) The term "height above the hull" means height above the uppermost continuous deck. This height shall be measured from the position vertically beneath the location of the light.

3 Alternative Lights

- 3.1 All vessels of $L \geq 24.4$ metres shall carry a complete set of alternative (standby) lanterns for the masthead lights, side lights (P. and S.) and stern light.
- 3.2 On oil carriers all lanterns including alternative lanterns shall be of electric type. On vessels other than oil carriers the alternative lanterns may be either electric or oil type.
- 3.3 One set of spare bulbs (one per light) should be carried for the electric lanterns. A set of spare chimneys (one per light) should be carried for the oil lanterns.

4 Lights and Sound Signals

The tables at the following sections indicate the signal appliances that are to be carried by vessels of type and length as indicated.

4.1 Power Driven Vessels $L \geq 50$ m

Item	No. Reqd	Intensity/Size	Remark
Masthead Light	1 fwd 1 aft	visibility 6 n. miles	
Side Light (P&S)	1 set	" 3 n. miles	
Stern Light	1	" 3 n. miles	
Anchor Light	1 fwd 1 aft	" 3 n. miles	all round white
N.U.C. Light	2	" 3 n. miles	all round red
Black Ball	3	0.6 m diameter	
Black Diamond	1	0.6 m diameter, 1.2 m height	
Whistle	1	audibility 50 m $\leq L < 75$ m 1 n. mile 75 m $\leq L < 200$ m 1.5 n. mile	
Bell	1	0.3 m mouth diameter	
Gong	1		for $L \geq 100$ m

4.2 Power Driven Vessels $20 \text{ m} \leq L < 50$ m

Item	No. Reqd	Intensity/Size	Remark
Masthead Light	1	visibility 5 n. miles	
Side Light (P&S)	1 set	" 2 n. miles	
Stern Light	1	" 2 n. miles	
Anchor Light	1	" 2 n. miles	all round white
N.U.C. Light	2	" 2 n. miles	all round red
Black Ball	3	0.6 m diameter	
Black Diamond	1	0.6 m diameter, 1.2 m height	
Whistle	1	audibility 1 n. mile	
Bell	1	0.3 m mouth diameter	

4.3 Power Driven Vessels $12 \text{ m} \leq L < 20$ m

Item	No. Reqd	Intensity/Size	Remark
Masthead Light	1	visibility 3 n. miles	
Side Light (P&S)	1 set	" 2 n. miles	may be combined lantern
Stern Light	1	" 2 n. miles	
Anchor Light	1	" 2 n. miles	all round white
N.U.C. Light	2	" 2 n. miles	all round red
Black Ball	3	dimensions commensurate with size of vessel	
Black Diamond	1	ditto	
Whistle	1	audibility 0.5 n. miles	
Bell	1	0.2 m mouth diameter	

4.4 Power Driven Vessels L < 12 m

Item	No. Reqd	Intensity/Size	Remark
Masthead Light	1	visibility 2 n. miles	
Side Light (P&S)	1 set	" 1 n. miles	may be combined lantern
Stern Light	1	" 2 n. miles	
Anchor Light	1	" 2 n. miles	all round white
Black Ball	3	dimensions commensurate with size of vessel	
Black Diamond	1	ditto	
sound Signal	1	means of making efficient sound signal	

4.5 Power Driven Vessels L < 7 m and maximum speed not exceed 7 knots may in lieu of the lights prescribed in 4.4 above, exhibit an all round white light and shall, if practicable, also exhibit sidelights.

4.6 Additional Requirements for Power Driven Vessels engaged in Towing

Item	No. Reqd	Remark
Masthead Light	3	for length of tow (Note) \geq 200 m
	2	for length of tow < 200 m (to be arranged in a vertical line)
Towing Light (yellow)	1	Visibility : L < 50 m 2 n. miles L \geq 50 m 3 n. miles (to be arranged in a vertical line above stern light)
Black Diamond	1	applicable to length of tow \geq 200 m, size 0.6 m diameter and 1.2 m height,

Note

The length of tow is measured from the stern of the towing vessel to the after end of the tow.

4.7 Additional Requirements for Fishing Vessels

4.7.1 A vessel engaged in trawling

Item	No. Reqd	Remark
All Round Light Green and White or X Shape	1	to be arranged in a vertical line, the upper being green and the lower white
	1	
	1	two cones with their axes together in a vertical line one above the other
Masthead Light	1	applicable to L \geq 50 m, to be positioned abaft and higher than the green light required above

4.7.2 A vessel engaged in fishing other than trawling

Item	No. Req'd	Remark
All Round Light Red and White or X Shape	1 1 1	to be arranged in a vertical line, the upper being red and the lower white two cones with their axes together in a vertical line one above the other
All Round Light White or Cone Apex	1 1	applicable when there is outlying gear extending > 150 m horizontally from the vessel

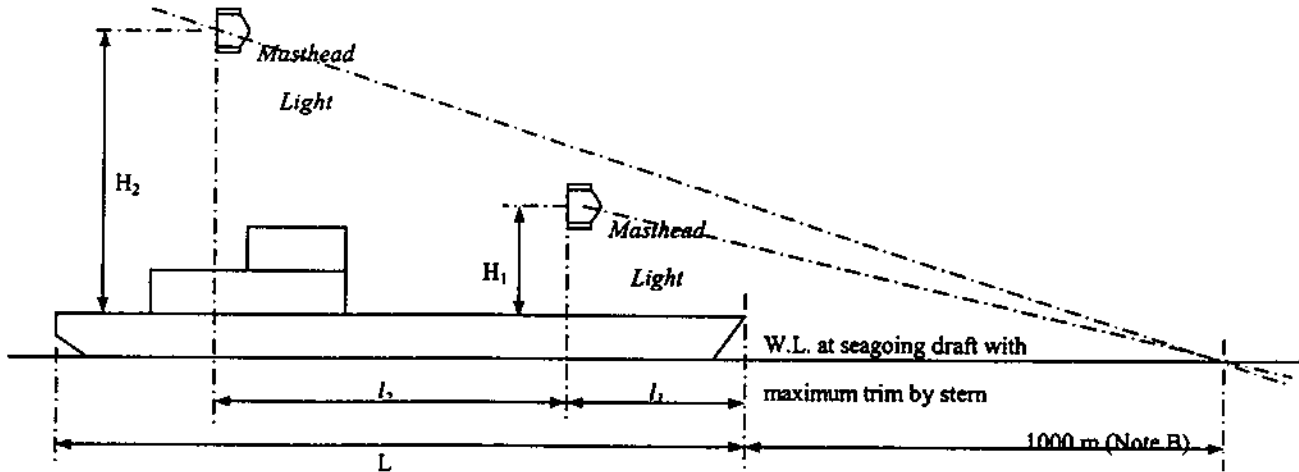
4.8 Dumb Vessels

shall carry lights, shapes and sound signals prescribed for a power driven vessel of her length except the masthead lights.

5 Positioning of Light Signals

Except in special cases, the masthead light, side lights and stern light shall be so placed as to be above and clear of all other lights and obstructions.

5.1 Masthead Light



Length (m)	$L < 12$ (Note A)	$12 \leq L < 20$ (Note A)	$20 \leq L < 50$ (Note A)	$L \geq 50$
l_1	--	--	--	$\leq 0.25L$
l_2	--	--	--	$\geq 0.5 L$
H_1	may be < 2.5 m (Note D,F)	≥ 2.5 m (Note C,F)	≥ 6 m or ship's breadth (whichever is greater), but need not > 12 m (Note F)	
H_2	--	--	--	$\geq (H_1 + 4.5)$ (Note E,F)

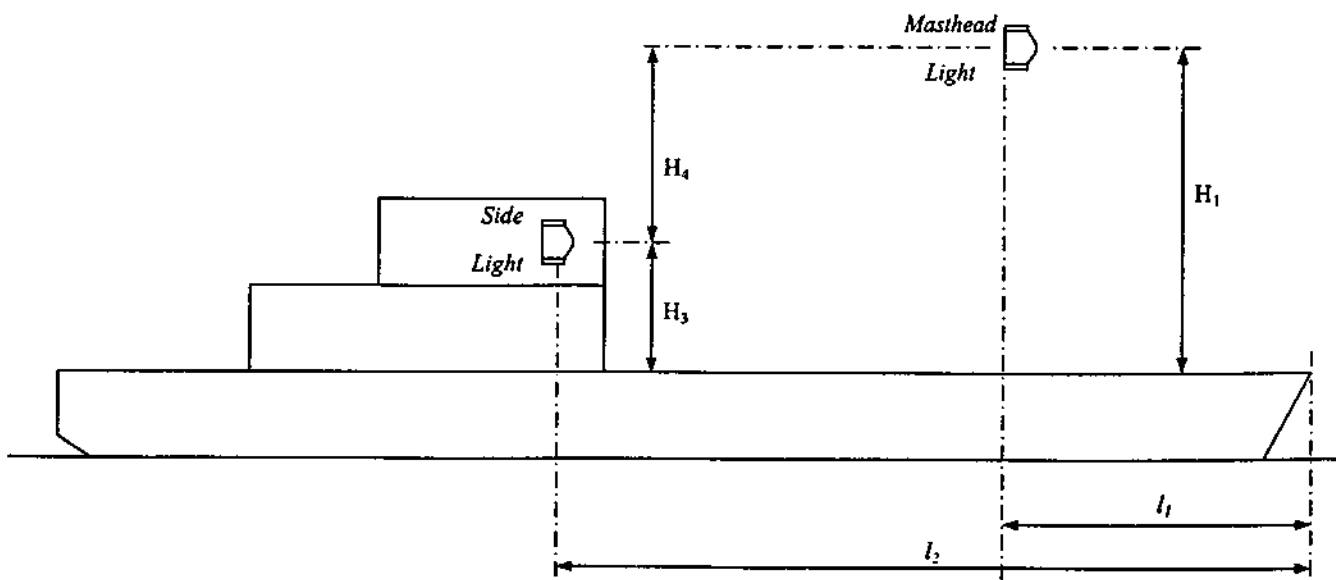
Note

- (A) On vessels of $L < 50$ m only one masthead light is required.
- (B) The vertical separation of masthead lights of power-driven vessels shall be such that in all normal conditions of trim the after light will be seen over and separate from the forward light at a distance of 1000 m from the stem when viewed from sea level.
- (C) On vessels of $12 \text{ m} \leq L < 20$ m the height is measured from gunwale.
- (D) Vessels of $L < 12$ m carry the uppermost light as a height of less than 2.5 m above the gunwale. When however a masthead light is carried in addition to side lights and a stern light or the all-round lights prescribed in the regulation is carried in addition to side lights, then such masthead light or all-round light shall be carried at least 1 m higher than the side lights.
- (E) One of the two or three masthead lights prescribed for a vessel when engaged in towing or pushing another vessel shall be placed in the same position as either the forward masthead light or the after masthead light; provided that, if carried on the after mast, the lowest after masthead light shall be at least 4.5 m vertically higher than the forward masthead light.
- (F) The masthead light of high speed vessel with a length to breadth ratio of less than 3 may be placed at a height related to the breadth of the vessel lower than that prescribed for H_1 , provided that the base angle of the isosceles triangles formed by the sidelights and masthead light, when seen in end elevation, is not less than 27° .

5.2 Side Light

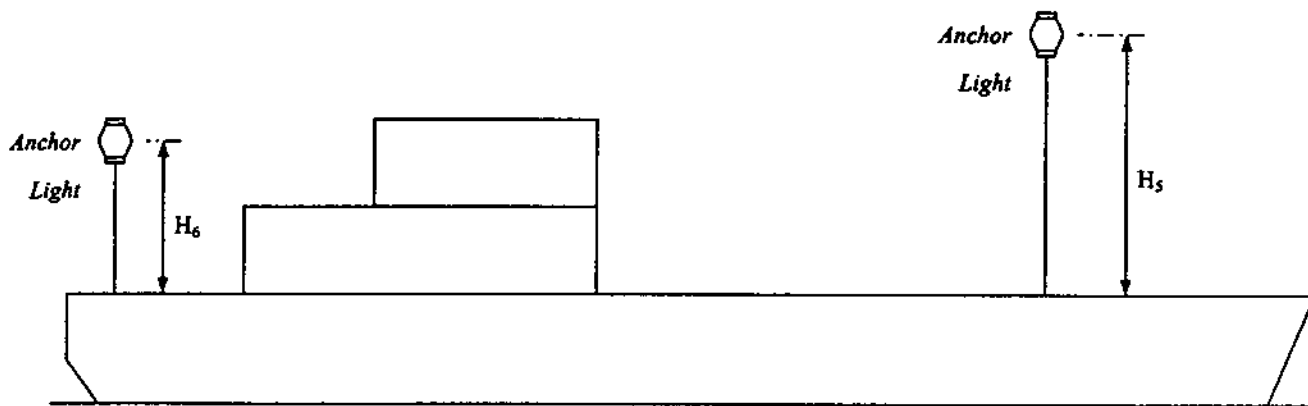
5.2.1 The side lights of vessels of $L \geq 20$ m shall be fitted with inboard screens painted matt black. On vessels of $L < 20$ m the side lights, if necessary to provide with horizontal sectors, shall be fitted with inboard matt black screens. With a combined lantern, using a single vertical filament and a very narrow division between the green and red sections, external screens need not be fitted.

5.2.2 Side lights shall not be so low as to be interfered with by deck lights. They shall be placed at or near the side of the vessel (recommended not more than 0.1 ship's breadth from shipside).



Length (m)	$L < 20$	$12 \leq L < 50$	$L \geq 50$
l_3	no requirement	$> l_1$ (i.e. side light not to be in front of masthead light)	$> l_1$ (i.e. side light not to be in front of forward masthead light)
H_3	$\leq 0.75 H_1$		
H_4	in the case of combined lantern, $\geq 1\text{m}$	--	--

5.3 Anchor Light

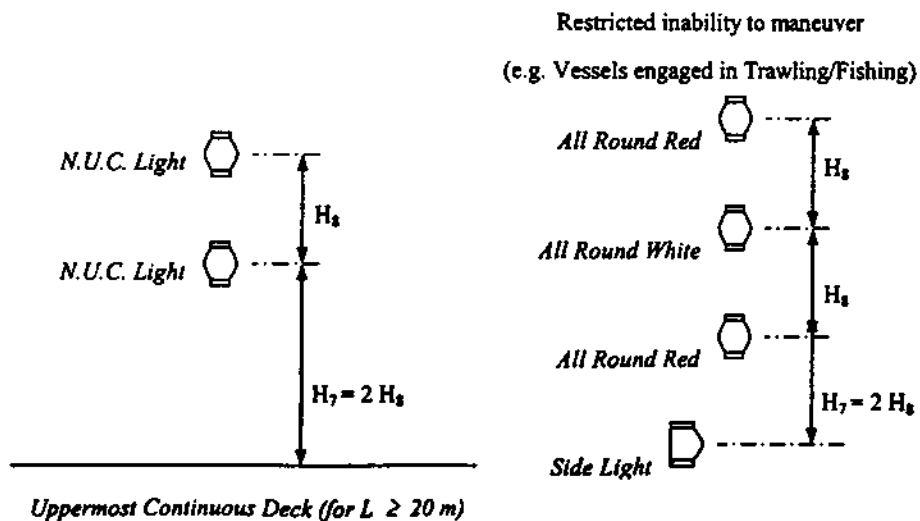


Length (m)	$L < 50$ (Note)	$L \geq 50$
H_5	Position can best be seen	$\geq 6\text{ m}$
H_6		$\leq (H_5 - 4.5)$

Note

On vessels of $L < 50\text{ m}$, only one anchor light is required.

5.4 Vertical Spacing of Lights



Length (m)	$L < 20$	$L \geq 20$
H_7	≥ 2 m (Note A)	≥ 4 m (Note A)
H_8 (Note B)	≥ 1 m	≥ 2 m

Note

- (A) In the case of after masthead light, H_7 shall be at least 4.5 m higher than the forward masthead light.
- (B) When 3 lights are carried they shall be equally spaced.

CHAPTER IX
TONNAGE MEASUREMENT

[021022]

PART 1 GENERAL

1 APPLICATION

1.1 Subject to 1.2 below, this chapter shall apply to -

- (a) new vessel; and
- (b) at the request of the owner for re-measurement of tonnage, existing vessel.

1.2 The following vessels are not required to be measured in accordance with this chapter -

- (a) any vessel the tonnage of which has been measured in accordance with the Merchant Shipping (Registration)(Tonnage) Regulations and is issued with the relevant tonnage certificate; or
- (b) any vessel in possession of International Tonnage Certificate issued in accordance with the International Convention on Tonnage Measurement of Ships, 1969.

2 METHOD OF TONNAGE MEASUREMENT

2.1 The gross and net tonnages shall be determined in accordance with Part 2 of this chapter provided that in the case of novel types of vessel with constructional features which render the application of the provisions of Part 2 unreasonable or impracticable, the gross and net tonnages shall be determined as required by the Director.

2.2 All measurements used in the calculations of volumes shall be taken and expressed in metres to the nearest centimetre.

2.3 Gross and net tonnages shall be expressed as whole numbers, decimals being rounded off downwards.

2.4 All volumes included in the calculation of gross and net tonnages shall be measured, irrespective of the fitting of insulation or the like, to the inner side of the shell or structural boundary plating in ships constructed of metal, and to the outer surface of the shell or to the inner side of the structural boundary surfaces in ships constructed of any other material.

2.5 The total volume shall include the volumes of appendages (e.g. rudder, kort nozzle, skeg, etc.), but exclude the volumes of spaces opened to sea.

PART 2 ASCERTAINMENT OF TONNAGE

3 VESSELS OF 24 M IN LENGTH AND ABOVE

- 3.1 Except wooden fishing vessels and primitive transportation vessels (kaitos), tonnage of vessels of 24 m in length and above should be ascertained in accordance with Part II of the Merchant Shipping (Registration)(Tonnage) Regulations.

4 WOODEN FISHING VESSELS AND PRIMITIVE TRANSPORTATION VESSELS OF ANY LENGTH, AND OTHER VESSELS OF LESS THAN 24 M IN LENGTH

- 4.1 The tonnage of wooden fishing vessels and primitive transportation vessels (kaitos) of any length; and all vessels of less than 24 m in length should be ascertained in accordance with this section.

4.2 Gross tonnage

- 4.2.1 The gross tonnage (GT) shall be determined by the following formula:

$$GT = K_1 (V_1 + V_2)$$

where: $K_1 = 0.2 + 0.02 \log_{10} V_1$

$V_1 = V_H$, total volume of all enclosed spaces under the main deck, in m^3 ; which should be obtained from 4.2.2 below (in catamaran, $V_1 = 2 \times V_H$).

$V_2 =$ total volume of all enclosed spaces above the main deck, in m^3 ; which should be obtained from 4.2.3 below.

- 4.2.2 V_1 shall be determined by the following formula:

$$V_H = LBDC \quad m^3$$

where:

$L =$ length of the main deck, m;

$B =$ in vessels of other than wooden construction, the moulded breadth (in catamaran, the moulded breadth of one hull); and in wooden vessels, the breadth measured to the outer planking of the hull, m;

$D =$ moulded depth, m;

$C =$ coefficient obtained from the following tables depending on the type of vessel:

Class and Type of Vessel	Propulsion	Basic Hull Form	Hull Form Factor (C)
Class I Vessel			
Launch Ferry	Mechanically propelled	ship	monohull 0.55
			catamaran 0.50
Primitive Transportation vessels (Kaito)		junk	0.60

Class and Type of Vessel	Propulsion	Basic Hull Form	Hull Form Factor (C)
Class II Vessel			
Dangerous Goods Carrier	Non mech. propelled	box	0.90
Noxious Liquid Substances Barge	Non mech. propelled	box	0.90
Oil Carrier	Non mech. propelled	box	0.90 (Note)
	Mechanically propelled	ship	0.80 (Note)
Dry Cargo Vessel	Mechanically propelled	junk	0.60
		ship	0.80 (Note)
		box	0.90 (Note)
Dumb Lighter (incl. Flat Top Barge)	Non mech. propelled	box	0.90
Edible Oil Barge	Non mech. propelled	box	0.90
Water Boat	Mechanically propelled	ship	0.60
Tug	Mechanically propelled	ship	0.60
Transportation Vessel	Mechanically propelled	ship	0.55
Transportation Sampan	Mechanically propelled	junk	0.60
Pilot Boat	Mechanically propelled	ship	0.60

Floating Workshop (incl. Repair Pontoon, Welding Barge) Crane Barge Flat Top Work Barge Landing Pontoon, Separation Barge, Ice Boat Fish Drying Hulk	Non mech. propelled	box	Vertical ends	1 (Note)
			Sloped ends	0.90 (Note)
Class III Vessel				
Fishing Vessel	Mechanically propelled / Non mech. propelled	junk	0.60	
GRP Fishing Sampan	Mechanically propelled	ship	0.60	

Note

For a vessel with intermediate hull form, for example, bow in ship form and stern in box form, C shall be the mean of the two coefficients, i.e. $(0.80 + 0.90) / 2 = 0.85$.

4.2.3 V_2 shall be determined by the following formula:

$$V_2 = \sum l \times b \times h \quad m^3$$

where l , b , h are respectively the mean length, mean breadth and mean height of each tier of the enclosed spaces above the main deck, in m.

4.3 Net Tonnage

4.3.1 The net tonnage (NT) shall be determined by the following formula:

$$NT = K_2 GT$$

where: K_2 = coefficient obtained from the following table;

GT = gross tonnage calculated by 4.2.1 above.

Class and Type of Vessel	K_2
Class I Vessel	
All types of vessels	0.50

Class II Vessel		
	Mechanically propelled	Non mech. Propelled
Dangerous Goods Carrier Noxious Liquid Substances Carrier Oil Carrier Dry Cargo Vessel Edible Oil Carrier	0.56	0.84
Dumb Lighter (incl. Flat Top Cargo Barge) Hopper Barge	0.84	
All types other than the above	0.30	
Class III Vessel		
All types of vessels	0.30	

CHAPTER X

VESSEL OPERATOR REQUIREMENTS

[020#20]

1 General

Every Class I, II or III vessel that is fitted with propulsion engine should be controlled by the following appropriate complement when underway -

- (a) coxswain; and
- (b) engine operator, except that specified in Schedule 3 of the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap. 548 sub. leg.).

2 Certificate Classes and Validity

Local certificates of competency issued before, and after commencement of the Merchant Shipping (Local Vessels)(Local Certificates of Competency) Rules (MS(LV) (LC of C)Rules) and its validity limitations are shown in the following table :

Certificates issued before the commencement of (MS(LV)(LC of C)Rules)	Certificates issued under (MS(LV) (LC of C)Rules)	Vessels Applicable
Local Certificate of Competency as Master of a vessel of 300 tons and under; Local Certificate of Competency as Trawling Master	Coxswain Grade 1	Up to and including 1600 gross ton
Local Certificate of Competency as Master of a vessel of 60 tons and under	Coxswain Grade 2	Up to and including 24 m length
Local Certificate of Competency as Master of a Fishing Vessel;	Coxswain Grade 3	Up to and including 15 m length
Local Certificate of Competency as Ferry engineer; Local Certificate of Competency as Engineer for a vessel with engine power over 150 BHP	Engine Operator Grade 1	Up to and including 3000 kW total propulsion power
	Engine Operator Grade 2	Up to and including 1500 kW total propulsion power
Local Certificate of Competency as engineer of a vessel with engine power up to 150 BHP; Local Certificate of Competency as Engineer of a Fishing Vessel	Engine Operator Grade 3	Up to and including 750 kW total propulsion power

- 2.2 Local certificate of competency as master restricted to operate a craft of not more than 10 metres in length and fitted with either a petrol outboard engine of not more than 12 KW power or a diesel engine of not more than 38KW power within limits of permitted areas issued before the commencement of the MS(LV) (LC of C) Rules shall, unless earlier suspended or cancelled-
- (a) continue in force until the date of its expiry;
 - (b) valid for operation within the limits of the permitted areas as shown shaded on the map in Schedule 3 of the MS (LV) (LC of C) Rules; and
 - (c) subject to the conditions except the geographic operational limits as endorsed in the original certificate.
- 2.3 Local certificate of competency as master restricted to operate in typhoon shelters only issued before the commencement of the MS (LV) (LC of C) Rules shall, unless earlier suspended or cancelled-
- (a) continue in force until the date of its expiry;
 - (b) valid for operation in typhoon shelters only; and
 - (c) subject to the conditions as endorsed on the original certificate.

3 Vessel Permitted to be Operated by Combined Coxswain and Engine Operator

- 3.1 Except the types of vessels stated in 3.2 below, and subject to the condition stated in 3.3 below, vessels equipped for unattended machinery space operation as required in IIIA/Pt 3/18 when operating within Hong Kong waters may be operated under the command of a person who is a holder of both valid coxswain certificate and valid engine operator certificate (i.e. "combined coxswain").
- 3.2 The following types of mechanically propelled vessels while under way are not allowed to be controlled by only a combined coxswain:
- (a) vessel permitted to carry more than 100 passengers
 - (b) oil carrier;
 - (c) dangerous goods carrier;
 - (d) noxious liquid substances carrier;
 - (e) tug;
 - (f) vessel of length exceeding 24 metres;
 - (g) vessel of total engine horsepower exceeding 1000 kW (1340 BHP);
 - (h) any other type of vessel as considered by the Director not suitable to be operated by only a combined coxswain.

- 3.3 On a vessel commanded by only a combined coxswain, there should be at least one crew member with adequate engineering knowledge on board to assist the combined coxswain while the vessel is underway.
- 3.4 Any fishing vessel equipped as required in IIIA/Pt 3/18 and of length not exceeding 24 metres and total propulsion power not exceeding 260 kW (350 BHP), while operating beyond Hong Kong waters may be controlled by only a combined coxswain.

4 Radar Operator

A ferry vessel operating a franchised service or a licensed service as it is defined in the Ferry Services Ordinance (Cap. 104) and plying outside the boundaries of the Victoria Port, is required to be fitted with a radar of approved type and to have on board, at all times when under way, a radar operator who has successfully completed a radar training course approved by the Director for the operation of the radar.

CHAPTER XI

VESSELS BUILT TO CLASSIFICATION SOCIETY'S RULES AND REGULATIONS FOR HIGH SPEED CRAFT

[020020]

1 General

1.1 This chapter applies to dynamically supported craft, and vessels which are designed and built to the requirements of rules and regulations applicable to high speed craft (HSC) issued by a classification society as listed in Annex A of this Code.

1.2 The requirements of this chapter apply to new vessels of HSC since 1.1.2000 operating solely within the waters of Hong Kong.

2 Intact Stability

2.1 The intact stability should meet the relevant requirements of sections 2.3, 2.4, 2.5, 2.11, 2.12 and annex 6 and 7 (except paragraph 1.5) of the HSC Code.

3 Damaged Stability

3.1 The damaged stability should meet the relevant requirements of sections 2.6, 2.13 and annex 7 (except paragraph 1.5) of the HSC Code

4 Seating construction, Safety belts

4.1 A seat should be provided for each passenger and crew member for which the vessel is certified to carry.

4.2 The installation of seats should be such as to allow adequate access to any part of the accommodation space. In particular, they should not obstruct access to, or use of, any essential emergency equipment or means of escape.

4.3 Seats and their attachments, and the structure in the proximity of the seats, should be of a form and design, and so arranged, such as to minimize the possibility of injury and to avoid trapping of the passengers after the assumed damage in the collision design condition. Dangerous projections and hard edges should be eliminated or padded.

4.4 One-hand-release safety belts should be provided for front row seats. The g_{coll} acceleration for seat belt should not be less than 3.

4.5 All seats, the supports and deck attachments should have good energy-absorbing characteristics and should meet the requirements of annex 9 of the HSC Code.

5 Directional control system

5.1 Means for directional control in compliance with requirements of chapter 5 of the HSC Code should be provided.

6 Structural fire protection

- 6.1 The bulkheads and decks of engine room boundary should be provided with structural fire protection based on providing protection for a period of 30 minutes.
- 6.2 The bulkheads and decks separating wheelhouse and passenger spaces should be constructed with smoke-tight materials.
- 6.3 The requirements of sections 7.4.3.1 and 7.4.3.4 of HSC Code should be complied with.

7 Fire detection and fixed fire extinguishing system

- 7.1 A fire detection system and a fixed fire extinguishing system should be provided for engine rooms.
- 7.2 A fire detection system should be provided for compartments where fuel oil tank are located.

8 Remote control, alarm and safety systems

- 8.1 The remote control, alarm and safety systems should meet the requirements of chapter 11 of the HSC Code.

9 Radar installations

- 9.1 One set of radar should be fitted. If a radar in compliance with section 10 of the safety survey regulation has been fitted on the vessel, no additional radar is required.

10 Wheelhouse Layout

- 10.1 The wheelhouse should be designed so that an all-round view of the horizon from the navigating workstation is obtained.
- 10.2 The layout of the wheelhouse should comply with the requirements of sections 15.3.2~15.3.6 of HSC Code.

11 Documentation

- 11.1 Every vessel should be provided with operating manual, route operating manual, training manual and maintenance manual in accordance with section 18.2 of HSC Code.

12 Failure mode and effect analysis

- 12.1 A failure mode and effect analysis (FMEA) in respect of the vessel's directional control systems, machinery, electrical installation and stabilization systems should be conducted according to the requirements in annex 4 of the HSC Code. A detailed FMEA may not be required for a system if it meets the conditions stated in sections 4.4 and 4.5 of the annex.

13 Operational and safety trial

- 13.1 The operational and safety performance of the vessel should be demonstrated in accordance with annex 8 of the HSC Code.**

CHAPTER XII
SPECIAL REQUIREMENTS FOR VESSELS
CARRYING DANGEROUS GOODS

[020821]

PART 1

Hull Construction and Equipment

1 Hull Construction

- 1.1 < The hull should be constructed of metal >.
- 1.2 Cargo holds should be efficiently ventilated.
- 1.3 A means for effectively closing the engine room and other machinery spaces should be fitted so as to prevent a fire in that space from spreading.

2 Windlass

- 2.1 Every vessel should be fitted with windlass of sufficient number, strength and power for recovering the cables and anchors.

3 Signals

- 3.1 A vessel on which explosives are being handled (carriage, loading and unloading, etc.) should -
 - (a) between sunrise and sunset, fly the international code signal "B" at the fore masthead; and
 - (b) between sunset and sunrise, exhibit an all-round red light at a height of not less than 6 metres above the uppermost deck, and such light shall be of such intensity as to be visible in clear atmosphere on a dark night at a distance of at least one nautical mile.
- 3.2 A vessel on which petroleum having a flash point of less than 61°C (closed cup test) is being handled should -
 - (a) between sunrise and sunset, fly a red flag of not less than one metre square with a white circular centre 150 mm in diameter at the fore masthead and also fly the international code signal "S.U.7."; and
 - (b) between sunset and sunrise, exhibit an all-round red light at a height of not less than 6 metres above the uppermost deck, and such light shall be of such intensity as to be visible in clear atmosphere on a dark night at a distance of at least one nautical mile.

4 Notices

- 4.1 A vessel on which dangerous goods is being handled should prominently display at suitable locations onboard two of each of the following notices -

不准吸煙 No Smoking

不准明火 No Naked Lights

The Chinese characters and English letters should be at least 100 mm in height.

PART 2

Carriage of Dangerous Goods in Packaged Form or in Solid Form in Bulk

5 Regulatory Requirements

5.1 Unless otherwise specified elsewhere in this code, any vessel intended for the carriage of dangerous goods in packaged form or in solid form in bulk should -

- (a) (i) in addition to complying with the fire protection requirements prescribed in Schedule 4 of the safety survey regulation, (ii) comply with the special requirements for ships carrying dangerous goods as stipulated in Part C, chapter II-2 of the SOLAS; and
- (b) be in accordance with the requirements of the IMDG Code with regard to classification, identification, marking, labelling, placarding, packing, stowage, segregation, fire precautions and documentation.

6 Dumb Steel Lighters carrying Packaged Dangerous Goods in Freight Containers

6.1 Dumb steel lighters intended for the carriage of any class(es) of dangerous goods as shown in the following table may, instead of complying with the above para. 5 (i)(b), comply with the relevant requirements indicated in the following table. Dumb lighters which carry cargoes in open-hatch type cargo hold should meet the requirements of items A to G; flat top barges which carry cargoes on a complete weather deck should meet the requirements of items A, F and G. Notwithstanding meeting the safety construction requirements shown in the table, the carriage of such cargoes should comply with the control measures that embrace segregation, stowage and safe handling of dangerous goods as imposed from time to time by the Port Control Division of the Department.

(✓ means applicable)

No.	Requirement	Class of DG								
		1.4 s	2	3	4	5.1	5.2	6.1	8	9
A	<p>Fire Pump Water Supplies readily availability of water supplies sufficient for 2 jets, each with a 15 m length hoses and Ø12 mm nozzles, to cover the whole designated cargo area. On existing vessel such fire pump may be electrical driven submerged pump rigged on frame fitted at shipside with hose attached for readily uses. On new vessel, a permanently installed fire pump should be fitted.</p>	✓	✓	✓	✓	✓	✓	✓	✓	✓

(✓ means applicable)

No.	Requirement	Class of DG								
		1.4 s	2	3	4	5.1	5.2	6.1	8	9
B	Electrical Installation electrical equipment and wiring fitted in cargo hold should be of ignition-proof type. However there should not be any electrical equipment or wiring fitted in such cargo space if classes 1.4s, 2.1 and class 3 having flashing point less than 23°C (closed cup test) are to be carried.	✓	✓	✓					✓	✓
C	Detection System fixed fire detection and fire alarm system should be fitted in cargo hold. However such system may be waived if it can be shown that the crew can provide regular watch of the cargoes onboard.	✓	✓	✓	✓	✓			✓	✓
D	Ventilation System power ventilation of at least 2 air changes per hour for an empty hold. On existing vessel portable extraction fans of sufficient power may be provided. On new vessel, a fixed ventilation fan and ducting system should be fitted. The fans should be of ignition-proof type.		✓	✓	✓	✓			✓	✓
E	Bilge Pump an independent cargo hold bilge pump should be provided. Portable type submerged pump may be used.			✓					✓	✓
F	Portable Fire Extinguisher A minimum of additional 3 × 4 kg dry powder portable fire extinguishers should be provided.			✓	✓	✓	✓	✓	✓	✓

G	Separation from Machinery Space and Fire Protection lifting appliance and generator engines located on fore mast should be partitioned (with height not less than to the top of the engines) on the rear side (facing the cargo stowage area) and the two sides. Spark arrester should be fitted for engine exhaust pipes.	✓	✓	✓	✓	✓	✓	✓
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PART 3

Carriage of Carriage of Dangerous Goods in Liquid Form in Bulk

7 Carriage of Flammable Cargoes

7.1 Oil carriers and any vessel intended for carrying cargoes having a flash point not exceeding 61°C (closed cup test) should meet the applicable structural fire protection requirements prescribed in Schedule 4 of the safety survey regulation.

7.2 Any internal combustion engine installed on deck should be of air, hydraulic or hand starting. The engine exhaust pipe should be fitted with spark-arrestor.

8 Carriage of Dangerous Liquid Chemicals

8.1 The construction and equipment of any vessel constructed or adapted and used for the carriage in bulk of any liquid product listed in chapter 17 of the IBC Code should comply with the relevant requirements of the said Code.

ANNEX A

RULES AND REGULATIONS APPLICABLE TO LOCAL VESSELS

[020921]

1 American Bureau of Shipping (ABS)

(a) Rules for Building and Classing: Steel Vessels under 90 metres in Length

Part 2	Materials and Welding
Part 3	Hull Construction and Equipment
Part 4	Machinery Equipment and Systems

(b) High Speed Craft Guide

2 Bureau Veritas (BV)

(a) Rules and Regulations for the Classification of Ships (steel vessels only)

Part I	Classification - Surveys
Part II	Hull structure
Part III	Machinery - Systems

(b) Rules for the Construction and Classification of High Speed Craft

3 China Classification Society (CCS)

(a) Rules and Regulations for the Construction and Classification of Sea-going Steel Ships

Vol. 2, Part 2	Hull Structure
Vol. 3, Part 3	Machinery
Vol. 4, Part 4	Electrical Equipment
Vol. 6, Part 8	Welding
Vol. 6, Part 9	Materials

(b) Rules and Regulations for Construction and Classification of Inland Waterways Steel Ships (applicable to vessels of appropriate principal dimension ratio, operating solely within Hong Kong waters)

Vol. 1, Part 2	Hull Structure
Vol. 2, Part 3	Machinery
Vol. 2, Part 4	Electrical Equipment
Vol. 3, Part 8	Materials
Vol. 3, Part 9	Welding

(c) Rules and Regulations for Construction and Classification of Sea-going High Speed Craft

4 Det Norske Veritas (DNV)

(a) Rules for Classification of Ships

Part 2	Materials and Welding
Part 3	Hull and Equipment
Part 4	Machinery and Systems

(b) Rules for Classification of High Speed and Light Craft

Part 3	Structures, Equipment
Part 4	Machinery and Systems - Equipment and Operation

5 Germanischer Lloyds (GL)

(a) GL Rules and Regulations - Ship Technology

Part 1 - Seagoing Ships

Chapter 1	Hull Structures
Chapter 2	Machinery Installations
Chapter 3	Electrical Installations
Chapter 5	High Speed Craft

6 Lloyd's Register of Shipping (LR)

(a) Classification of Ships - Rules and Regulations

Vol. 3, Part 3, 4	Ship Structures
Vol. 3, Part 5	Main and Auxiliary Machinery
Vol. 3, Part 6	Electrical System

**(b) Rules and Regulation for Classification of Special Service Craft
(applicable to high speed craft, light displacement craft, multi-hull craft and craft with draught to depth ratio less than or equal to 0.55)**

Vol. 4-6, Part 6-8	Hull Construction
Vol. 7, Part 9-16	Machinery and Electrical System

7 Nippon Kaiji Kyokai (NK)

(a) Rules for the Survey and Construction of Steel Ships -

Part C Hull	Construction and Equipment
Part CS	Hull Construction and Equipment of Small Ships
Part D	Machinery Installations
Part H	Electrical Installations
Part K	Materials
Part M	Welding

(b) Rules for High Speed Craft - Guidance for high speed craft

8 **Register of Fishing Vessel of the People's Republic of China**

- (a) Rules and Regulations for Construction Glass Reinforced Fibre Fishing Vessel, 1995 (applicable to fishing sampan only)

Note

The above lists the current rules and regulations applicable to local vessels and is not exhaustive. Alternative standards may be considered.

ANNEX B
FREEBOARD MARK

[020621]

1 Position of Marks

1.1 The freeboard marks shall be marked amidships (middle of vessel's registered length) on each side of the side shell.

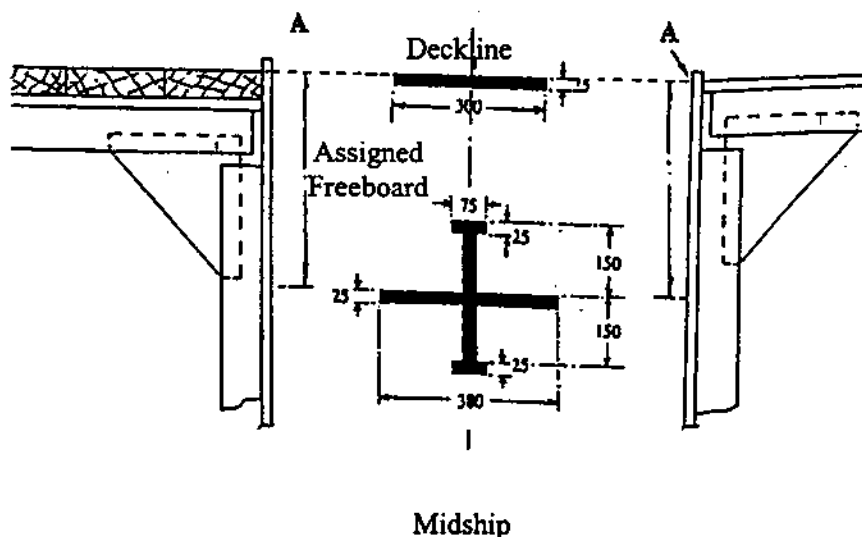
2 Method of Marking

2.1 The lines shown in following paragraph 3 shall be marked in such a manner as to make them visible. They shall be painted in white or yellow on a dark background or in black on a light background.

2.2 On steel or aluminium vessels, the marks shall be made by cutting plate or welding bead; on wooden vessels, the marks shall be cut into the planking to a depth of not less than 3 mm; on glass reinforced plastic (GRP) vessels, the marks shall be permanently affixed to the sides of the vessel by bonding or some other effective method.

3 Details of Marks

- 3.1 (a) *The deck line* shall be a horizontal line marked amidships with its upper edge passing through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell (point 'A'). Where the deck is partly sheathed amidships the upper edge of the deck line shall pass through the point where the continuation outwards of the upper surface of the actual sheathing at amidships intersects the outer surface of the shell.
- (b) The freeboard mark shall be located with its upper edge of horizontal line at a distance, equal to the assigned freeboard, vertically below the top of abovementioned deckline.



ANNEX C

SPILL OUT METHOD

[020821]

- 1 The following 'spill out' method takes account of the spillage of saturated cargo and water overboard as the vessel heels and may be developed either by direct means or by computer.
- 2 When the investigation is done by direct means curves should be prepared for the vessel at various angles of inclination (see Figure C 1.1 at next page) representing :-
 - (a) the effective volume of the cargo hold to the top of the hatch coaming;
 - (b) the cargo heeling lever (y); and
 - (c) the KN lever, i.e. horizontal distance between the keel and the centre of buoyancy.
- 3 In developing these curves the cargo surface should normally be assumed to remain horizontal (i.e. parallel to the sea level) and to be touching the top of the hatch coaming. Where however it can be shown that the distribution and area of the spillways on either side of the vessel are capable of rapidly releasing the cargo with the vessel at any angle of heel consideration may be given to lowering this final level of the cargo surface to a point coincident with the lower edge of the spillway openings. The KN lever curve (i.e. cross curve) is derived from calculations which assume that the top of the hold is open and that the buoyancy above the level of the horizontal cargo surface beyond the line of the hatch coaming does not exist (see Figure C 1.2 at next page). An allowance may be given for all erections which have weathertight means of closure.
- 4 With this information, curves of righting levers (GZ) for various loaded conditions can be prepared. The initial stability of the vessel in the upright condition should be calculated in the normal manner with the metacentric height (GM) corrected for the effect of all free surfaces including that in the main cargo hold where account should be taken of the actual density of the contents therein; normally a specific gravity the mean of that for saltwater and the cargo will be acceptable. This method of investigating the stability characteristics is illustrated by a typical calculation sheet which is available from the Department upon request.

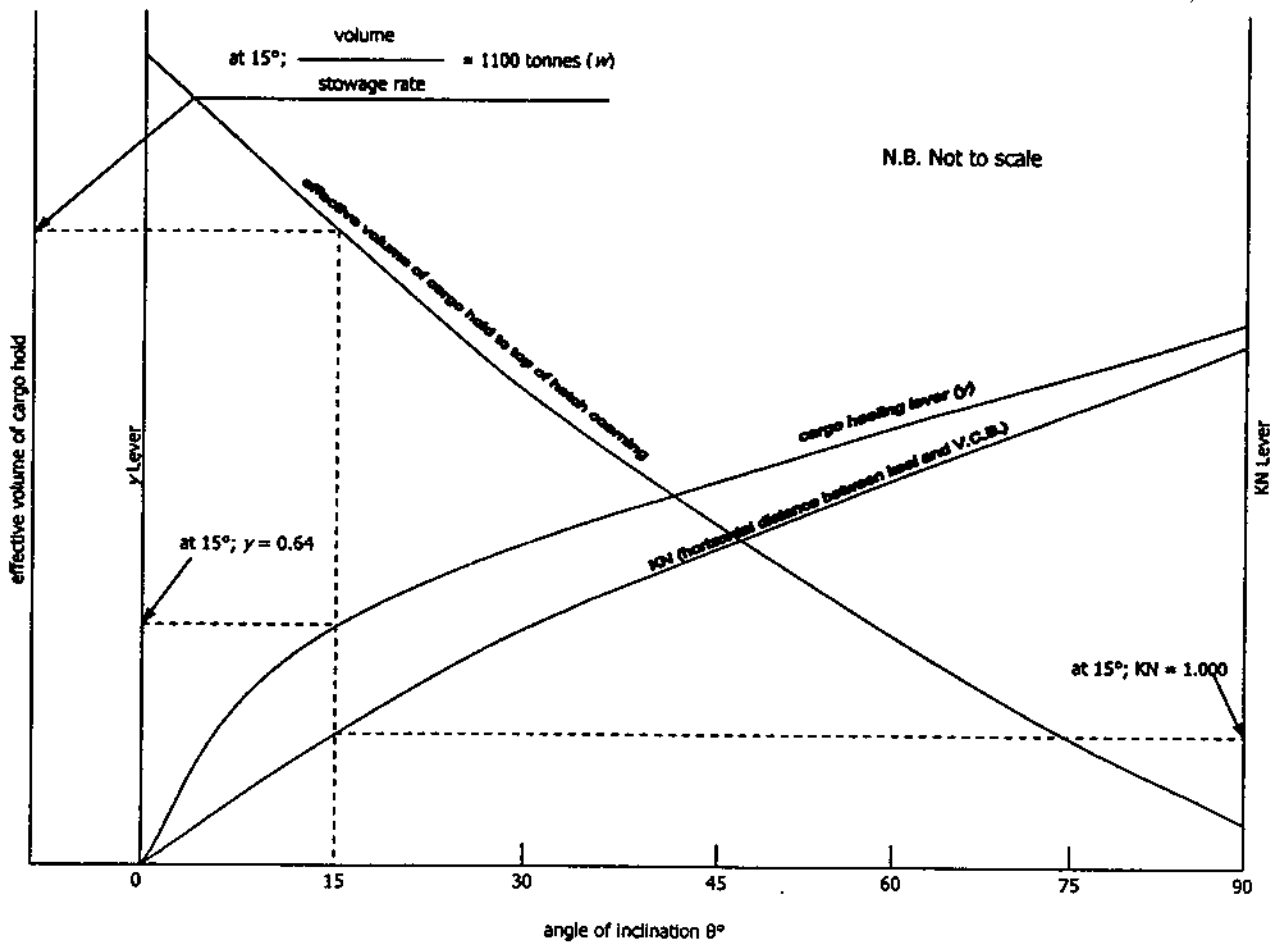


Figure C 1.1

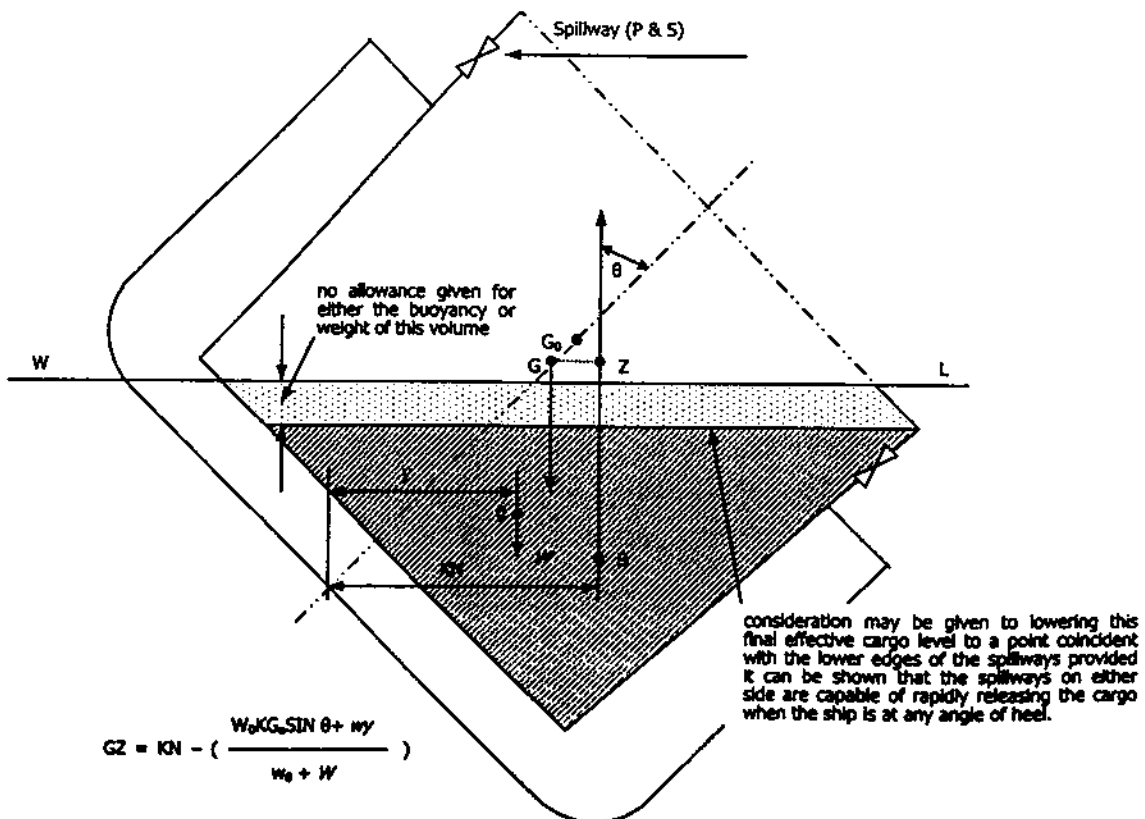


Figure C 1.2

ANNEX D

STABILITY WHEN LIFTING

[020821]

1 Conditions to be computed

- 1.1 A vessel's various loading conditions at free running and at the worst condition of combination of hook load and outreach of hook should be computed.

2 Stability Standard

- 2.1 If the vessel's hull proportions fall within any one of the following limits:

- (a) Beam / depth 3.40~4.76; or
- (b) Length / beam 3.20~4.50; or
- (c) Draft / depth 0.60~0.85

it is sufficient if the vessel owner can demonstrate that the vessel, at the condition stated in paragraph 1.1, will not heel beyond the limits of one-half of the freeboard or one-half of the draft, whichever occurs first.

- 2.2 Any vessel which hull proportions fall beyond the limits stated in paragraph 2.1 above, should meet the stability standard prescribed below:

Area under GZ curve up to the smallest of the following angles:

- (a) the angle corresponding to the maximum GZ
- (b) the downflooding angle
- (c) 40°

should not be less than:

0.053 m-rad if the vessel operates within Hong Kong waters; or
0.080 m-rad if the vessel operates in River Trade Limits.

ANNEX E

APPROXIMATE DETERMINATION OF STABILITY

[020821]

Part 1 SIMPLE INCLINING TEST

1 General

- 1.1 The simple inclining test is to ascertain the angle of heel a vessel would occur when 2/3 of the passengers distributed on one side of the vessel and 1/3 on the other side. The objective being that it should be ensured that no angle of heel exceeding 7° will arise as a result of the movement of passengers from one side of the vessel to the other side.

2 Test Procedure

- 2.1 The vessel should be tested with weights to represent the fully laden service condition.
- 2.2 The weights should be disposed, as far as practicable, with their centres of gravity in the correct vertical and lateral positions having regard also to those vessels where passengers should be taken as congregated at 0.3 m² each on the uppermost deck or decks to which they have access.
- 2.3 The test should be carried out in the following manner: -
- (a) the vessel is to be loaded with weights as described above,
 - (b) calculate a heeling moment equal to 1/12th the weight of the passengers (W) multiplied by the extreme breadth (B) of the vessel (WB/12),
 - (c) transfer weights from one side of the vessel to the other side in 3 equal increments such that the final heeling moment is equal to WB/12, the same vertical CG of the whole being maintained.

The weights and the distance they are moved together with the angle of heel should be recorded for each of the 3 moves.
 - (d) restore all the weights to their original positions and record angle of heel when they are restored,
 - (e) repeat (c) moving weights from opposite side,
 - (f) repeat (d),
 - (g) if the angle of heel exceeds 7° during the test, the owner might add ballast weight and to repeat the test procedures (c), (d), (e) and (f). The weight and position of such ballast should be recorded.

3 Acceptance of Stability

- 3.1 As a general rule, no vessel will be accepted where the angle of heel exceeds 7° as a result of a heeling moment of WB/12 or any greater heeling moment that could be expected to arise in service.

- 3.2 In any case where an angle of heel exceeding 4° has arisen as a result of a heeling moment of WB/12, the seating and other arrangements of the vessel should be examined to see whether a heeling moment greater than WB/12 could be expected to arise in service. If this is found to be so, proper measure should be taken to avoid an angle of heel greater than 7° would arise as a result of this heeling moment.

Part 2 ROLLING PERIOD TEST

4 General

The rolling period is the duration for one complete oscillation, i.e. starting from the extreme end of a roll to one side of the vessel, moves right across to the other extreme side and returns to the original starting point.

5 Test Procedure

- (a) The test should be conducted in harbour, in smooth water with the minimum interference from wind and tide.
- (b) The mooring should be slack. A reasonable clearance at the sides of the vessel should be maintained to avoid making any contact during its rolling.
- (c) Weights which are liable to swing or liable to move (e.g. a drum) should be secured against such movement. The free surface effects of slack tanks should be kept as small as is practicable.
- (d) The vessel is made to roll (e.g. by rhythmically lifting up and putting down a weight far off middle-line; by people running athwartships in unison; or by any other means). As soon as this forced rolling has commenced the vessel is allowed to roll freely and naturally.
- (e) By means of a stopwatch, the time is taken for not less than about five complete oscillations.
- (f) After allowing the roll to completely fade away, repeat the operations in paragraphs (d) and (e) twice and time recorded.

6 Determination of Metacentric Height (GM)

- (a) From the total time for the total number of oscillations made, calculate the mean time (say T seconds) for one complete oscillation.
- (b) The metacentric height GM_0 is to be determined from the following formula:

$$GM_0 = 0.77 (B/T)^2$$

where

B = extreme breadth of vessel in metres

(Note: the formula is valid for motor dry cargo vessel of length not more than 24 metres in lightweight condition).

ANNEX F

DAMAGED STABILITY REQUIREMENTS for LAUNCHES, FERRY VESSELS

[020822]

PART 1 Damaged Stability Requirements

- (1) Every vessel to which this Annex applies should be subdivided by bulkheads, which should be watertight up to the bulkhead deck, into compartments the maximum length of which should not exceed the length permitted by the required freeboard and intact stability as calculated in accordance with Parts 2 and 3 of this Annex.
- (2) Every vessel should be so constructed as to keep asymmetrical flooding, when the vessel is in a damaged condition, at the minimum consistent with efficient arrangements.

PART 2 Assumptions on which calculations are to be based

The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions-

- (3) Applicable size and arrangement of vessel:
 - (a) the length of vessel is not more than 79 metres;
 - (b) no passenger is carried underdeck;
 - (c) the vessel is fitted with plane bulkheads and no stepped bulkhead between main compartment is fitted;
 - (d) no partial subdivision above margin line is provided; and
 - (e) no cross-flooding fitting is provided.
- (4) The vessel should be assumed to be in the worst service conditions as regards stability which is likely to be experienced having regard to the intended service of the vessel, or damage calculations should be made over the operational draught range as a basis for curves of required metacentric height (GM) values or permissible vertical centre of gravity (KG) values.
- (5) The permeabilities should be assumed to be as follows-

Spaces	Permeability
Appropriated for stores but not occupied by substantial quantities thereof, void spaces	95
Appropriated as accommodation	95
Appropriated for machinery	85
Appropriated for liquids	0 or 95, whichever results in the more onerous requirements

- (6) The extent of damage should be assumed to be as follows-
- (a) longitudinal extent: 3 metres plus 3% of the length of the vessel, or 11 metres or 10% of the length of the vessel, whichever is the least;
 - (b) transverse extent: 20% of the breadth of the vessel, measured inboard from the vessel's side at right angles to the centre line at the level of the deepest subdivision load waterline taken parallel to the keel;
 - (c) vertical extent: from the base line upwards to main deck;
 - (d) if any damage of lesser extent than that indicated in sub-subparagraphs (a) or (b) and (c) would result in a more severe condition regarding heel or loss of GM, such damage should be assumed for the purposes of the calculation.
- (7) Where the vessel is fitted with decks, inner skins or longitudinal bulkheads of sufficient tightness to restrict the flow of water, regard should be had to such restrictions in the calculation.

PART 3 Sufficiency of Stability in the Damaged Condition

The intact stability of the vessel should be deemed to be sufficient if the calculation specified in Part 2 shows that, after the assumed damage, the condition of the vessel is as follows-

- (8) In the final stage after damage -
- (a) the positive residual righting lever curve should have a minimum range of 15° beyond the angle of equilibrium;
 - (b) the area under the righting lever curve should be at least 0.015 metre radians, measured from the angle of equilibrium to the lesser of-
 - (i) flooding angle (the angle at which progressive flooding occurs);
 - (ii) 22° (measured from the upright);
 - (c) a residual righting lever is to be obtained within the ranged specified in subparagraph (1)(a), taking into account the greater of the following heeling moments-
 - (i) the crowding of all passengers towards one side;
 - (ii) due to wind pressure as calculated by the formula-

$$GZ = \frac{\text{heeling moment}}{\text{Displacement}} + 0.04 \quad (\text{m})$$

However, in no case is this righting lever to be less than 0.10 metres;

- (d) for the purpose of calculating the heeling moments in sub-subparagraph (c), the following assumptions should be made-
 - (i) moments due to crowding of passengers-
 - (aa) 4 persons per square metre;
 - (bb) a mass of 75 kg for each passenger;

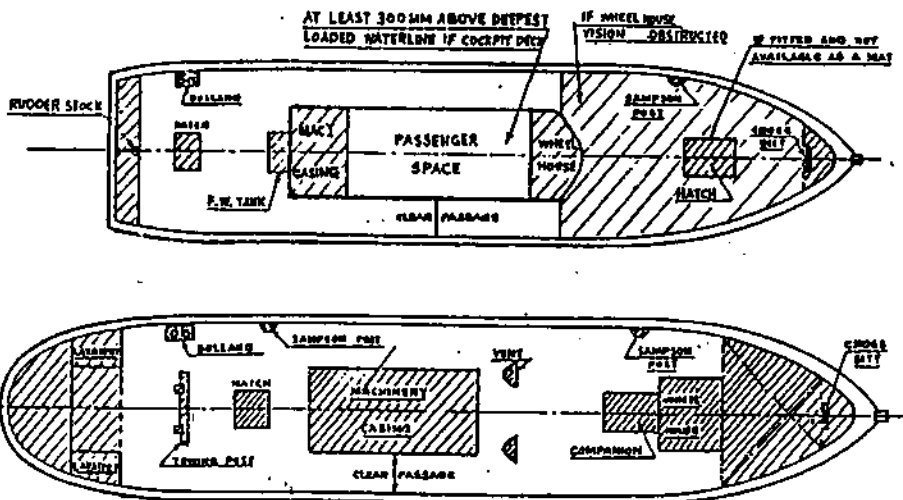
- (cc) passengers should be distributed on available deck areas towards one side of the vessel on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment;
 - (ii) moments due to wind pressure-
 - (aa) a wind pressure of 120N/m^2 to be applied;
 - (bb) the area applicable should be the projected lateral area of the vessel above the waterline corresponding to the intact condition;
 - (cc) the moment arm should 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;
 - (e) in intermediate stages of flooding the maximum righting lever should be at least 0.05 metre and the range of positive righting levers should be at least 7° . In all cases only one breach in the hull and only one free surface need to be assumed.
- (9) The final condition of the vessel after damage should be as follows-
 - (a) there should be a positive residual GM of at least 50 mm as calculated by the constant displacement method;
 - (b) in no case should the margin line be submerged in the intermediate stages or final stage of flooding.

ANNEX G

Guidance Plan for Determination of Passenger Space for Launches, Ferry Vessels, Tugs, Transportation Boats and Pilot Boats

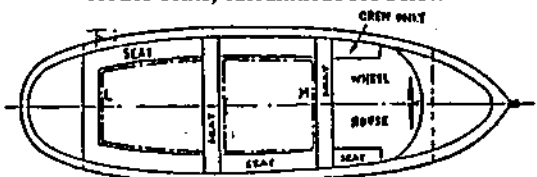
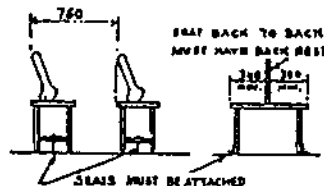
[020427]

(Area as shown thus to be excluded)

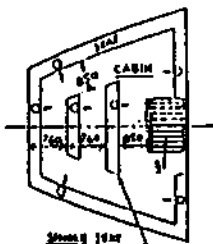
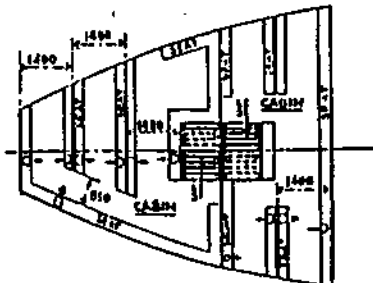


Requirements on Seating Arrangement (mm)

- (a) minimum width 460
- (b) minimum pitch
 - (i) seats facing each other 1400
 - (ii) seats facing the same way 760
- (c) minimum leg room
 - (i) not more than 6 seats in one row 250
 - (ii) more than 6 seats in one row 300
- (d) corner seats, calculations see below



EXAMPLES $\frac{L-450}{460}$ PASSENGERS M LESS 4 @ 250 $\frac{M-930}{460}$ PASSENGERS



○ MARKED SHOWING THE DIRECTION OF PASSENGERS ON THE SEAT.

ANNEX H

DOMESTIC LIQUEFIED PETROLEUM GAS INSTALLATION

[020#22]

1 Marking

- 1.1 Liquefied petroleum gas (LPG) cylinders should be clearly marked of the name of their contents.

2 Properties of LPG

- 2.1 Possible dangers arising from the use of LPG appliances include fire, explosion and asphyxiation due to leakage of gas from the installation, etc.
- 2.2 LPG is heavier than air and, if released in a space with coaming, may travel some distance whilst seeking the lowest part of that space and its adjoining spaces. The accumulation of LPG probably poses dangerous consequence and fatality when triggered by inadvertent spark or ignition.

3 Storage

- 3.1 No more than 50 kg (or combined water capacity 130 litres) of LPG should be carried on board.
- 3.2 LPG cylinders and expended cylinders should as far as practicable be stowed on open decks. The cylinders and all valves, pressure regulators and pipes leading from such cylinders should be properly secured, protected against mechanical damage, and excessive variations in temperature and direct rays of the sun. The cylinders should be installed upright to prevent liquid from flowing into the pipes.
- 3.3 The LPG cylinder storage locker, and associated pipes and joints should be readily accessible for the check of suspected leaks; and should be as far away from any air pipes, ventilators, hatchways, etc. and close to the cooking appliances as practicable.
- 3.4 Except as necessary for service within the space, electrical wiring and fittings should not be permitted within compartments used for the storage of LPG. Where such electrical fittings are installed, they should be to the satisfaction of the Department for use in a flammable atmosphere. Sources of heat should be kept clear of such spaces and "不准吸煙 No Smoking" and "不准明火 No naked light" notices should be displayed in a prominent position.
- 3.5 Compartments used for the storage of LPG should not be used for storage of other combustible products nor for tools or objects nor part of the gas distribution system.

4 Installation

4.1 LPG pipes-

- (a) LPG pipes should be of solid drawn copper alloy or stainless steel pipes, with appropriate compression or screwed fittings.
- (b) Flexible connections should be avoided. Should they be used, an approved type of synthetic rubber hose connection should be fitted. When used with flexible connections, appliances should be controlled from the nearest isolating valve fitted on metallic pipe.

4.2 LPG cylinder storage locker

- (a) For storage above main deck-
 - (i) ventilation openings should be provided on top and bottom of locker;
 - (ii) when LPG pipe is arranged to pass through bulkhead, the opening on bulkhead should be of suitable size and height, to avoid the gas being leaked into the accommodation. If the LPG pipe is a synthetic rubber hose, precaution should be taken to prevent the hose being chafed. A protecting conduit should be fitted when necessary.
- (b) For storage below main deck-
 - (i) the locker bulkhead should be of gastight construction. Bulkhead piece should be fitted when LPG pipe is arranged to pass through bulkhead;
 - (ii) adequate ventilation should be provided at top and bottom of locker and be led overboard;
 - (iii) gas detectors should be fitted to detect any accumulation of LPG in the bilge.

4.3 Gas consuming appliances preferably should be fitted with automatic gas shut-off device to stop the LPG supply in event of flame failure or pipe ruptures.

5 Maintenance

5.1 Changing cylinders should be done according to instructions of gas dealers. If it is suspected that either a cylinder or valve is faulty, put it ashore as quickly as possible, and in the meantime keep it in the open air, clear of any gratings, hatches or other openings leading below decks.

5.2 Sufficient ventilation should be provided at the cooking space to displace the products of combustion and respiration.

6 Inspection

6.1 The vessel's crew or operator should regularly examine joints of the LPG installation. If a leakage is suspected, the cylinder stop valve should be turned off immediately; the vessel's engine should be stopped, no switch on/off of electrical appliances and no other means of ignition allowed until it is certain that the vessel is clear of gas. Never

put an appliance back into use without the leak having been found and rectified.