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GUIDANCE

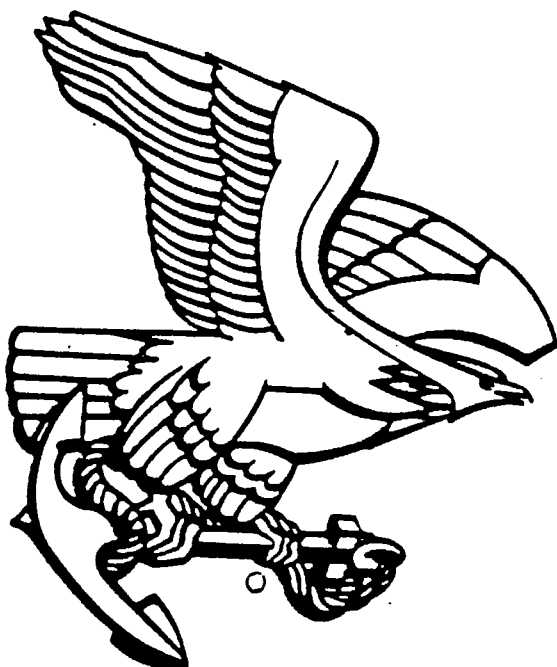
FOR PREPARING

FISHING

VESSELS '

STABILITY BOOKLET

1990



AMERICAN BUREAU OF SHIPPING

GUIDANCE FOR PREPARING

FISHING VESSELS'

STABILITY BOOKLET

1990

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CONTENTS**STABILITY BOOKLET FORMATS FOR FISHING VESSELS**

In response to the needs of the industry, the Bureau has prepared **STABILITY BOOKLET** formats for use by masters and operating personnel of fishing vessels. These formats, together with instructions for the preparation of the Stability Booklets were developed for two separate vessel lengths and are presented in four parts as follows:

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PART 1

GUIDELINES FOR THE PREPARATION OF STABILITY

BOOKLETS FOR FISHING VESSELS WITH A

LENGTH EQUAL TO OR GREATER THAN 45 METERS

GUIDELINES FOR THE PREPARATION OF STABILITY BOOKLETS FOR FISHING
VESSELS WITH A LENGTH $\geq$ 45 M.

- 1) These guidelines are to be read in conjunction with PART 2, "STABILITY BOOKLET FORMAT" for Fishing Vessels.
- 2) These guidelines and the Stability Booklet format of Part 2 are intended for fishing vessels of 45 meters (148 feet) in length and over. The stability criteria for these vessels are stated in Section 17 of the ABS Guide for Building and Classing Fishing Vessels. For fishing vessels of less than 45 meters in length, see Parts 3 and 4 respectively. The division in length at 45 meters is necessary to account for the more detailed instructions that should be provided to Masters of larger fishing vessels, such as the step by step instructions to calculate loading conditions other than the standard ones.
- 3) Items 1 to 5 inclusive of the Stability Booklet format, list items to be included, and give instructions on how to present these items. Also in the Stability Booklet format any words in brackets indicate where specific information/instruction is to be provided.
- 4) Use and selection of units are to be consistent and uniform. "Metric Tons" to indicate tons of 1000 kg, and "Long Tons" to indicate tons of 2240 lbs are to be used. Also the values should be given in decimal form instead of fractions.
- 5) The maximum permissible draft at amidships, Item 1.8, and its corresponding minimum freeboard, Item 1.9, are to be indicated on both sides of the vessel, amidships, with a mark as specified in paragraph 17.9.12 of our "Guide for Building and Classing Fishing Vessels", 1990 and later editions.
- 6) In Items 2.2.3, 3.3.3, 4.2, and 6.2 the LCG and LCB are referenced from the forward perpendicular. If the after perpendicular is used as a reference point, then the bracketed words are to be corrected accordingly.

Some shipyards are using amidships as a reference point; For fishing vessels, however, this practice should be avoided, if possible, because of the plus/minus sign associated with it.

- 7) In Item 2.3 if permanent ballast is installed, instructions are to be given stating that the ballast is not to be removed without prior approval by ABS.
- 8) Guidance for Item 2.5 is provided by paragraph 17.9.9 of our "Guide for Building and Classing Fishing Vessels", and for Item 2.6 by paragraph 17.9.10. The ice is to be assumed uniformly distributed, horizontally on decks and vertically

on vertical surfaces.

- 9) In Item 3.1 after the number of trim lines is established, the values should be rounded off to the nearest 100 mm (6 inches). The number of trim lines may be reduced further per Item 5.3.
- 10) For Items 3.1, 3.2, and 4.2 explanations with examples are to be provided for proper interpolation of in-between values.
- 11) In the Instructions to the Master, Item 6, a few warnings have been provided. Additional warnings should be provided wherever deemed appropriate. The publications mentioned in Item 6.11, contain lists of useful instructions; depending on the fishing vessel type, additional relevant cautions/warnings may be included in the Instructions to the Master. It is imperative for the Master to know the limitations of his vessel, therefore, the instructions to him should state clearly these limits and the hazards involved when exceeding them.
- 12) In the Standard Loading Conditions, Item 7, the following are to be observed:
 - (a) All tanks containing consumable liquids are assumed to have full free surface effects, even in the departure condition, unless the tank is completely empty, or a specific order of consumption is given in the Instructions to the Master and some tanks are still completely full at the particular phase of the fishing operation.
 - (b) In the loading condition of Item 7.3, "Hold half full with full deck cargo", deck cargo is to be assumed only if the vessel has provisions for carrying deck cargo, or stowing such cargo temporarily before transferring it to the hold.
 - (c) Loading condition of Item 7.8 is to show the vessel in the worst possible anticipated loading condition with regard to stability.
- 13) In preparing the loading conditions calculation sheets, the following are to be noted:
 - (a) On the first page under the heading, the blank brackets are to be replaced with the appropriate units, and the one for the perpendicular with the word Forward or Aft.
 - (b) If permanent ballast has been/will be installed, the light ship item should read:
"Light ship (including permanent ballast)".
 - (c) The other lines should be adjusted to correspond to the type of fishing vessel, and actual arrangement of tanks and cargo spaces. If the vessel has diesel engines, "Diesel Oil Tank # " in lieu of "Fuel Oil Tank # " is to be substituted.
 - (d) On the second page of the calculation sheet, pictorial



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drawings showing, in profile and plan views, the distribution of consumables and cargo per Item 4.1, are to be provided.

- (e) All loading conditions are to have positive stability margin on the respective line (14) of the second page of the calculation sheet.

It is stressed here that since the Master will estimate the weight of the fish cargo with obviously a wide margin of accuracy, it is more important to provide safe margins through the various steps of the stability presentation, taking these elements into consideration.

- (f) In all loading conditions the last line on the second page of the calculation sheet, "Reduction in Stability Margin due to water on deck", is to be filled-in, and then a comparison should be made with the Stability Margin (14), indicating to the Master the resulting reduction in the stability margin and freeboard and the importance of keeping the freeing ports unobstructed. See also Item 6.9.

- 14) In step 8.4 of the Instructions for Calculating Loading Conditions, the Master is instructed to distribute the fish cargo into the various compartments where fish is stowed. It is realized that the estimation of the amount of fish cargo, stowed on board while fishing at sea, can not be very accurate. Possibly for this reason, existing instructions to fishing vessel Masters are usually silent on this issue. However, in order to provide meaningful loading instructions to Masters, the calculation of the weight of the fish cargo, caught at sea, should be addressed. The most common and fairly accurate way of calculating DWT for any vessel is the direct reading of the draft marks; for larger vessels, at sea, this can be substituted by the taking of freeboard readings. Both of these methods require calmer seas. A third way to calculate this weight is by looking into the fish holds, and estimating the level of fullness of the hold and the density of the cargo. Because of the above, the designer/shipyard is to choose the method that is most appropriate to vessel's trade, area of operation, and standard practice in that region.

If the taking of freeboard readings is decided, the following should be inserted in the instructions to the Master, Item 6.3:

- When taking fore and aft freeboard readings to determine trim, always convert them to draft marks first. Do not use the difference of the fore and aft freeboard readings to determine trim.
- The taking of freeboard readings at sea can sometimes be difficult. The following suggestions may help in obtaining more accurate readings:

- .1 Do not take port or starboard readings if the vessel rolls. Change heading first so that the vessel remains steady in an upright position.
- .2 If there is swell take readings at the bottom and top (trough and crest) of the wave and then average them.
- .3 Do not take fore and aft readings if the vessel pitches. Change heading first so that the vessel remains steady in the fore-aft direction.
- .4 Always take more than three readings at each station, so that the average would be a close approximation of the actual value.

Warning! If you have to approximate, always be on the conservative side by recording the smaller value of freeboard readings.

Also, after the mean amidships draft is determined, instructions should be provided on how to calculate the weight of the fish cargo using the Displacement and the subtotal on the first page of the calculation sheet. For guidance, see step 8.12 of the Instructions for Loading Conditions.

- 15) In step 8.10 of the Instructions for Calculating Loading Conditions, if the vessel's corrected VCG exceeds the maximum allowable, the Master is instructed to take immediate corrective action to lower the vessel's VCG by ballasting empty tanks. If due to vessel's design, however, there are no empty ballast tanks, then proper instructions are to be provided for lowering the vessel's VCG.
- 16) When preparing the first page of the blank forms, Item 9, on the first three lines, "Light ship", "Crew and Effects", and "Equipment on deck", all of their respective values should be inserted. On the next two lines "Consumables on deck" (if applicable), "Stores & Spares", as well as on "Deck cargo" and "Water ballast", their respective VCG's should be inserted; and on every applicable line of column (4), the LCG should be inserted.

Several copies of the blank forms should be attached at the end of the Stability Booklet for the Master's use.

PART 2

STABILITY

BOOKLET

FOR THE

FISHING VESSEL

[N A M E]

[FORMAT FOR VESSELS WITH A LENGTH $\geq$ 45 METERS]

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1. PRINCIPAL DIMENSIONS AND PARTICULARS

- .1 Ship's Name
- .2 Type of Ship (e.g. trawler, seiner, dredger, longliner, etc)
- .3 Name of Builder and Hull Number
- .4 Date of Build/Conversion
- .5 Particulars of Classification
- .6 Nationality, Port of Registry and Official Number
- .7 Principal Dimensions:
 - .1 Length overall (LOA)
 - .2 Length between perpendiculars (LBP)
 - .3 Beam (extreme)
 - .4 Depth (extreme) to weather deck
- .8 Maximum permissible draft at amidships measured from the bottom of the keel.
- .9 The minimum freeboard corresponding to sub-item .8 above.
- .10 Displacement in salt water at the maximum draft (.8 above).
- .11 The minimum recommended draft at the forward and aft draft marks for any sailing condition (if applicable).
- .12 The minimum permissible freeboard at the stem and stern (if applicable).
- .13 Any other applicable restriction on draft and trim.
- .14 General arrangement plans showing watertight compartments, closures, vents, downflooding angles, etc.

2. LIGHT SHIP CHARACTERISTICS AND OTHER WEIGHTS

- .1 Date and place of inclining experiment or DWT survey, and who conducted it.
- .2 Light ship characteristics:
 - .1 Weight
 - .2 Vertical center of gravity above keel (VCG)
 - .3 Longitudinal center of gravity [aft of fwd] perpendicular (LCG)
- .3 If permanent ballast is installed, it should be included in the light ship characteristics, and a description of such ballast is to be indicated, giving the material, and its weight and location.
- .4 Constant and other weights and their centers of mass:
 - .1 Crew and their effects
 - .2 Equipment on deck (e.g. nets, traps, pots, skiffs, portable pumps, etc)
 - .3 Hanging loads (e.g. fishing gear, etc)
 - .4 Deck cargoes (e.g. fish, crab, lobster, etc)
 - .5 Consumables stored on deck
 - .6 Any other weight on board, not considered part of light ship
- .5 The weight and increase in VCG due to ice accumulation covering the whole ship is to be provided in a table as a function of amidships draft, measured from the bottom of the keel.
- .6 The weight and increase in VCG due to water entrapment on decks of vessels with bulwarks, regardless of having freeing ports, is to be provided in a table as a function of amidships draft, measured from the bottom of the keel.

3. TABLES OF HYDROSTATICS

- .1 Tables of hydrostatic particulars are to be provided for the following trim lines:
 - .1 even keel (zero trim)
 - .2 at 0.04L trim by the stern
 - .3 at any possible loading condition producing a trim in excess of 0.02L trim forward, or 0.06L trim aft.

See also Item 5.3.

- .2 The hydrostatic particulars are to be tabulated to a base of amidships draft, measured from the bottom of the keel (dx), over a range covering the light ship and maximum drafts, with an increment in draft of 100 mm (6 inches).
- .3 The hydrostatic particulars should include:
 - .1 extreme displacement (with appendages) in salt water at stated density
 - .2 moment to change trim one unit
 - .3 longitudinal center of buoyancy LCB (from [fwd] perpendicular).

4. VOLUMES AND CENTERS OF VOLUMES

- .1 Scaled drawings in profile and plan views are to be provided showing clearly the use and distribution of the various cargo compartments, fish wells, tanks, stores, as well as, machinery and crew accommodation spaces.
- .2 A table of capacities is to be provided with centers of volume (longitudinal [from the fwd] perpendicular, and vertical from the keel) for every compartment available for the carriage of cargo, fuel, stores, feed water, potable water, and water ballast. Where applicable, curves giving capacity and center of volume as a function of compartment depth or ullage are to be included. When ullage is used, its reference point is to be stated. Where the trim of the vessel significantly effects the accuracy of the sounding or ullage, separate tables should be provided.
- .3 A table is to be provided listing the maximum free surface moment for each tank and cargo compartment (including fish wells) likely to have free surface.

5. MAXIMUM ALLOWABLE VCG VERSUS DRAFT CURVES

- .1 Maximum Allowable VCG vs. Draft curves are to be developed and presented in graphs using the stability criteria of Section 17 of the ABS Guide for Building and Classing Fishing Vessels.
- .2 The curves are to be developed for all trim lines required in Item 3.1, presented in separate graphs and properly labeled. Each curve is to be the envelope encompassing the most critical segment in all different stability requirements of sub-item .1 above.
- .3 If any of the curves in sub-item .2 above do not vary much from each other, the most conservative one (the one with the lower VCG's) can be substituted for any other. Its label is to include the range of trims of the substituted curves. In such a case the hydrostatics of the corresponding trim line of Item 3.1 should also be omitted.
- .4 The ordinate of each graph is to indicate amidships drafts (dx) on the left. The range of drafts should be as indicated in Item 3.2.
- .5 Each graph is to indicate safe and unsafe regions. Special emphasis on this is to be placed in the Instructions to the Master.
- .6 The standard loading conditions per Item 7 are to be indicated on the graphs for illustration purposes, so that the Master has a graphical understanding of the margin of safety that each loading condition provides.

6. INSTRUCTIONS TO THE MASTER

.1 General

One of the most difficult tasks for the Master of a fishing vessel is to ascertain that his vessel has adequate stability. The reason for this difficulty is that, unlike any other cargo vessel which is loaded in port, a fishing vessel is normally loaded while fishing in the open seas under all kinds of adverse weather conditions. Understanding the basic stability concepts and maintaining the vessel's reserve stability becomes, therefore, of paramount importance. The instructions that follow have been prepared to enable the Master and other operating personnel to determine the Trim and Stability of the vessel in any loading condition, take necessary measures to improve stability, as needed, and then maintain that satisfactory stability.

.2 Center of Gravity

One important stability parameter is the center of gravity of the vessel. This is the single point where the downward force of the vessel's total weight can be assumed concentrated. It is comprised of all the different separate weights throughout the vessel, including the weight of the vessel, and its location is defined by the intersection of three distances: vertical from the keel (VCG), longitudinal from the [forward] perpendicular (LCG), and transverse from the vessel's center line (TCG). When the vessel is without cargo, stores, and consumables (i.e. light ship), its weight and center of gravity are determined by the inclining experiment. These values, called light ship characteristics, are stated in Item 2.2, and are the foundation of every stability calculation. Like a building block one starts with the light ship values and keeps adding the various other weights with their centers (consumables, stores, cargo, ballast etc) to arrive at the weight and center of gravity of the vessel in any loading condition. Adding weights above the center of gravity (VCG), raises that center and decreases stability, while adding weights below, lowers the center and increases stability. Also if the added weights are forward of the center of gravity (LCG) the vessel trims by the stem, while if the weights are placed aft of the center, the vessel trims by the stern. Likewise weights added to the left of the center of gravity (TCG) when facing forward, heel the vessel to port, while weights added to the right of center, heel the vessel to starboard. Examples of such weights which shift the TCG and produce a heel are lifting weights from the side, and ice accumulation on one side only. TCG should not be confused with the tendency of the vessel to heel to port or starboard due to influence of external forces such as wind and waves. How much the vessel will heel because of these forces

depends on the vertical center of gravity (VCG) and not on TCG which if the vessel is loaded properly, by having weights distributed equally to port and starboard, will be on the centerline. The VCG is the most important of the three distances as it directly effects the transverse stability, while the LCG effects the trim. By lowering the VCG the stability is improved.

Warning!: Always be concerned about weights hanging from booms, masts, etc. The center of the hanging weight acts at the point of suspension, much higher than the actual body of weight is in space, thus greatly increasing the vessel's VCG. In addition there is heeling to the side, if the point of suspension is off centerline, due to the movement of TCG, so the combination of the two may drastically reduce the margin of stability. Therefore, such lifting operations should be completed as rapidly as possible without jeopardizing the safety of the vessel, or the lifting gear, and they should be avoided under adverse conditions.

.3 Draft and Freeboard

Another important stability parameter is the vessel's draft. Draft is the distance from the underside of the keel to the waterline, and freeboard is the distance from the weather deck to the waterline; adding the two gives the depth of the vessel from the keel to the weather deck.

- .1 The draft indirectly and the freeboard directly, both indicate the amount of the reserve buoyancy, which is the amount of volume that the vessel has above the waterline. The reserve buoyancy produces the upward force that brings the bow of vessel up to its original position when a head wave covers the forward part of the vessel, or restores the vessel in the upright position when wave/wind action heels it to one side. Generally, when the reserve buoyancy is increased the stability becomes better, however, in order for the reserve buoyancy to be effective the watertight/weathertight integrity of the hull/superstructure is to be maintained. That is, doors, access, and other openings in side shell, deck and superstructure are to be closed to preclude flooding of intact spaces that provide buoyancy. It is realized that a fishing vessel must have hatches opened when loading fish at sea, however, it is imperative for the Master to have only one such opening opened at a time to minimize the risk of reduction in the reserve buoyancy.
- .2 The draft also directly indicates the displacement (total weight) of the vessel, as well as other hydrostatic properties which are listed in the table of Item 3.

Mean amidships draft is the average of the fore and aft drafts, and trim is the difference between these two drafts. In port, when the vessel is tied up to a pier, it is easy to read the draft marks and determine the mean amidships draft and trim. At sea, however, the Master has to exercise his judgement on the best way to find the fore and aft draft marks. [Specify the method(s) the Master has to use in order to find his draft and trim. See Item (15) of PART 1.]

Warning!: Do not exceed the maximum permissible draft indicated in Item 1.8 [insert value], as this may reduce the reserve stability and the vessel might capsize or founder.

.4 VCG vs Draft Curves

Based on the stability criteria and the trim of the vessel, the two important stability parameters, VCG and draft, are plotted against each other and presented in the graphs of Item 5. These graphs indicate for any amidships draft and trim, the corresponding maximum allowable vertical center of gravity (VCG) that the vessel may have. The vessel's actual VCG, corrected for free surface effects, should never be higher than the maximum allowable, taken from the graph at the vessel's mean draft. If the vessel's actual VCG is higher and in the unsafe region of the graph, the vessel may not be able to withstand the effect of wind/wave (or combination of the two) action, or any other heeling force, and thus may capsize.

.5 Loading Conditions

The standard loading conditions presented in Item 7 demonstrate conditions that are considered to have satisfactory stability. Any other similar loading condition will also have satisfactory stability, provided the restrictions and special instructions associated with these loading conditions are always complied with. For normal fishing process the Master will probably have no need to enter the graphs of Item 5 for the vessel's maximum allowable VCG, although it is advisable to be always aware of this value. It is strongly recommended, however, to check the drafts at the conclusion of each fishing phase, to make sure the limits specified in Items 1.9, 1.11, 1.12, and 1.13 [specify these limits here] are not exceeded. For those loading conditions which are different from the standard ones mentioned above, the Master must determine the maximum allowable VCG at the vessel's draft, and then calculate the vessel's actual VCG as explained in Item 8.

It should be stressed here that no loading condition (including the standard ones mentioned above) can be

guaranteed to provide satisfactory stability under all operating conditions. All that "satisfactory stability" means is that under certain operating and environmental conditions, that are most likely to be encountered, the stability criteria used have taken into account some unexpected adverse heeling forces; But not all forces and all their magnitudes. The Master has no control on the applicable stability criteria, which were used to develop the values of the calculated maximum VCG. But he has control on the difference between the maximum allowable VCG and the vessel's actual VCG, by keeping the latter as low as possible. The greater this difference is, called "stability margin", the better the vessel will withstand unexpected heeling forces. An example of such a heeling force is when the net of a trawler is caught at the sea-bed. The sudden pull of the trawl line on the fastening point, will produce a heeling force, the magnitude of which will depend on speed of the vessel and how close the angle of the line is to athwartships (the closer it is, the greater the force), and if at the same time there is a side wave, the combined heeling forces may exceed the stability margin. Likewise, when the vessel is at the crest of a long wave (greater than the vessel's length) with the fore and aft ends hanging out of the water, any margin of stability that is normally provided by the buoyancy at the ends of the vessel, no longer exists.

Warning!: Do not run in following waves at the same speed as the waves, as this will increase the time the vessel remains at the crest of a wave with potentially disastrous effect on stability.

.6 Free Surface

Free surface effect is the free unrestricted movement of liquid in any tank which is partially filled with liquid. The movement of the free liquid in the transverse direction produces an increase in the vessel's vertical center of gravity (VCG), called free surface correction. Free surface correction exists in every tank that is neither empty nor pressed up full. See the Table of Item 4.3. The greatest effect is at the region of the tank where its breadth is the maximum.

Because the free surface correction reduces the margin of stability, use of slack tanks should be kept to a minimum. No more than one pair of port and starboard, or a center line tank, for each type of consumable liquid, should be slack at any one time. For the proper order of consumption follow the sequence given below [insert the order of consumption for each type of liquid]. If water ballast is required for stability purposes, the designated tanks are to be filled up immediately and be carried pressed up at all times that such ballast is required. Otherwise the tanks should be completely empty. For the same reason bilges

should be kept pumped out at all times.

The total free surface correction for the vessel is the sum of the individual free surface moments for each tank that is neither empty nor pressed up full, divided by the total weight (Displacement) of the vessel in that loading condition.

.7 Shifting of Cargo

The danger of large free surface corrections also exists during loading of cargo fish-holds in bulk. To prevent this large free surface as well as shifting of such cargo, the portable divisions in the fish-holds [if provided] should always be properly installed. Also, to minimize the possibility of free surface effects and of shifting of cargo, the stowing order of fish-holds should follow the sequence given below [insert the order of loading for each hold].

Additionally all fishing gear, not in use, and all other heavy material should be placed as low in the vessel as possible, and properly stowed and lashed. Gear for releasing the deck load [for fishing vessels which carry their catch on deck] should be kept in good working order [give instructions as to when to use such release mechanism].

.8 Icing

The effect of icing on the vessel is to increase both the topside weight and VCG, thus producing a reduction in freeboard and the margin of stability. Additionally, the accumulation of ice can be on one side only, producing an undesirable heel due to the shifting of TCG. If the vessel will operate in an area where icing is likely to occur, the Master should make sure his applicable loading condition includes the increase in weight and VCG due to the ice formation, as given in the table of Item 2.5. Regardless of the above, however, one of the prime concerns of the Master should be the removal of ice as soon as it is formed.

Warning!: Do not remain for too long in areas where ice is accumulating fast. The icing loads imposed on the vessel may quickly exceed the calculated limits and thus jeopardize the vessel's safety.

.9 Water on Deck

The effect of entrapped water on deck is to increase the vessel's topside weight, increase its VCG due to high location of the weight, and increase further the VCG due to the free surface effect. All of these factors, as previously explained, are detrimental to the vessel's stability, and produce a large increase in VCG as shown in

the table of Item 2.6. To avoid this reduction in the stability, the Master should ensure that water does not get on decks in large quantities, and if this is unavoidable, that it drains from deck as soon as possible. Vessels with bulwarks on decks forming wells are required to have openings in the bulwarks, called freeing ports, to rapidly drain the decks of water. It is essential that freeing ports be kept clean and free of debris or any other obstruction that will inhibit the free flow of water. If freeing ports are provided with covers, the Master should ensure that they are maintained properly and are always in working condition; if ice conditions are anticipated the covers should either be removed or secured in the open position so that they do not freeze closed.

Additionally note that, as explained in sub-item .5 above, the value of the "Stability Margin", line (14) of the second page of the Loading Conditions sheet, is an indication of how well the vessel will withstand unexpected heeling forces. One of many of such forces is produced by the effect of water on deck, which is the value in the line below the line (14). Notice the decrease in the Stability Margin if this correction were to be subtracted. The importance, therefore, of keeping the freeing ports unobstructed should be very obvious.

Warning!: Although there might be some positive Stability Margin after the subtraction of the water entrapment correction, do not assume that because of that, the freeing ports could be blocked closed. This is merely an illustration on how fast the stability margin of the vessel can be depleted; there are many other heeling forces that can be imposed at any time.

.10 Conclusion

The above instructions intend to identify and keep the number of major stability hazards to a minimum. However, regardless of the number of instructions given, the Master should remember that there is no substitute for good seamanship and common sense judgement. For instance, one of the fundamentals of such good seamanship is for the Master to keep his vessel always upright by distributing weights equally to port and starboard. A few other basic ones are to have all openings into the hull and superstructure secured closed at all times to maintain the vessel's reserve buoyancy, unless the opening is required to remain open at that particular time for the working of the vessel; to have all gear and cargo securely stowed and lashed as necessary to prevent shifting; and to carry weights on the vessel as low as possible.

.11 Additional Information

An excellent source of instructions with proper illustrations is the North Pacific Fishing Vessel Owner's Association "VESSEL SAFETY MANUAL", or the identical "Gulf Coast Fishing Vessel Safety Manual". It is strongly recommended that a copy be placed on board and read by the Master and crew members. Additional information and instruction can be found in the FAO/ILO/IMCO Code of safety for Fishermen and Fishing Vessels, Part A "Safety and Health Practice for Skippers and Crew", and Part B "Safety and Health Requirements for the Construction and Equipment of Fishing Vessels". Each part is a separate book. The "Vessel Safety Manual" can be purchased from: NPFVOA, Vessel Safety Program, Room 207, C-3 Building, Fishermen's Terminal, Seattle, WA. 98119. The two books of the FAO/ILO/IMCO Code can be bought from: International Maritime Organization, Publications Section, 4 Albert Embankment, London SE1 7SR, U.K.

**Documents**

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7. STANDARD LOADING CONDITIONS**.1 Departure From Port**

[Insert appropriate units on all items below]

ITEM	Weight []	Above Keel		From [] Perpendic.		Free Surface
		VCG []	Moment []	LCG []	Moment []	Moment []
Light ship						XXXXX
Crew & Effects						XXXXX
Equipment on deck						XXXXX
Consumables on deck						XXXXX
Stores & Spares						XXXXX
Fuel Oil #						
Fuel Oil #						
Fuel Oil #						
Lube Oil #						
Fresh Water #						
Fresh Water #						
Sub. Total						
Deck Cargo						
Fish Well						
Cargo Hold #						
Cargo Hold #						
Water ballast #						
	(1)	(2)	(3)	(4)	(5)	(6)
TOTALS (1)(3)(5)&(6)		XXXX		XXXX		
VCG (2) = (3) / (1) & LCG (4) = (5) / (1)	XXXX		XXXX		XXXX	(7)
Free Surface Correction (7) = (6) / (1)						