



## SARAWAK RIVERS BOARD

### STANDARD OPERATING PROCEDURE (SOP) FOR VESSEL TONNAGE MEASUREMENT (VESSEL BELOW 24 METER IN LENGTH)



*"To Be The Lead Agency In River Management In Ensuring Safe, Clean And Natural Rivers"*

**SARAWAK RIVERS BOARD**

2<sup>ND</sup> FLOOR, ELECTRA HOUSE  
POWER STREET, 93000 KUCHING,  
SARAWAK

TEL: 082-234092 / FAX: 082-234096

e-mail: [srb@srb.gov.my](mailto:srb@srb.gov.my)  
[http:// www.srb.sarawak.gov.my](http://www.srb.sarawak.gov.my)

## 1. OBJECTIVES

This Standard Operating Procedures (SOP) is designed as guidelines on when, where and how to conduct / carry out tonnage measurement on various types of vessels (registered length below 24 meter) for registration, license / permit, taxes, freight and port charges, and method the size and capacity of the vessel.

Therefore, it is essential to acquire basic understanding on tonnage measurement in accordance to the rules and regulations of Merchant Shipping (Tonnage) Regulations, 1960.

## 2. TERMS AND DEFINITION

- 2.1 Tonnage
- Is a measure of **Volume** of a ship, not the weight.
- 2.2 Gross Tonnage
- Is a measure of volume inside a vessel or a function of the **Total Volume of all enclosed spaces of a ship**.
  - This includes all areas from keel to funnel and bow to stern. Gross tonnage is the complete physical volume of space a cargo ship's hold has the means to calculate gross tonnage is laid out in the International Convention on Tonnage Measurement of Ships.
  - Gross Tonnage is used to determine the number of crew, safety rules, registration fees, and port dues. It is the standard most often used to define a vessel.
- 2.3 Net Tonnage
- Net tonnage is a method of calculation for how much cargo / passenger space a ship has or a function of **Volume of cargo spaces / the number of passengers**.
  - It is not a measure of weight or mass, or the displacement weight of a ship, but instead **a volume measurement**. Net tonnage is obtained by deducting from the gross tonnage, crew and navigating spaces and an allowance for the space occupied by the propelling machinery.
  - The tonnage most frequently used for the calculation of tonnage taxes and the assessment of charges for wharfage and other port dues.
- 2.4 Displacement (W)
- The weight of water of the displaced volume of the ship, which equals the weight of the ship and cargo. In other words: it is the weight of the volume of water displaced by the hull.
- 2.5 Pilot House
- An enclosed place in which the main steering wheel, controls, engine room are located. A wheel house.

- 2.6 Deadweight Tonne (DWT) - Total weight of cargo, stores, fuel and water needed to submerge a ship from her light draught to her maximum permitted draught; it is given by the difference between the load displacement and light displacements (also known as lightweight).
- 2.7 Cargo Deadweight - Capacity is determined by deducting from total deadweight the weight of fuel, water, stores, crew passengers, and other items necessary for use on a voyage.
- 2.8 1 Ton - Is equivalent to 1000 cubic feet (1000 ft<sup>3</sup>) or 2.83m<sup>3</sup> of space.
- 2.9 Length of Overall (LOA) - Is measured from the extreme forward end of the bow to the extreme aft end of the stern.
- 2.10 Length (L) - Is measured from the forward surface of the stem, or main bow perpendicular member, to the after surface of the sternpost, or main stern perpendicular member.
- 2.11 Breadth (B)  
(Commonly called beam) - Is measured from the most outboard point on one side to the most outboard point on the other at the widest point on the ship.
- 2.12 Depth (D) - Is measured vertically from the lowest point of the hull, ordinarily from the bottom of the keel.  
- The depth of a vessel involves several vertical dimensions: freeboard, draft, draft marks, and load lines.
- 2.13 Draft - Vertical distance from the waterline to the bottom of the hull.
- 2.14 Air Draft - Vertical distance from the waterline to the top of the mast.
- 2.15 Freeboard - Vertical distance from waterline to the deck line.
- 2.16 Plimsoll Mark - A mark placed on the ship's side to indicate maximum allowable draft. (Safe waterlines are shown by the **Plimsoll** mark on the ship's sides. These marks prevent overloading)
- 2.17 Girth - Any expanded length.
- 2.18 Hull - The body of a ship, including shell plating, framing, decks, bulkheads.
- 2.19 Galley - A cook room or kitchen.

### 3. METHOD OF MEASUREMENT

- 3.1 The owner and the master of a ship to be measured shall make it available for measurement by a surveyor and afford all necessary facilities for its survey and measurement and shall produce such plans, drawings, specifications and other documents relating to the ship that the surveyor may require for his use and retention.
- 3.2 All measurements used in the calculations of volumes shall be taken and expressed in metres to the nearest centimetre.
- 3.3 Gross and net tonnages shall be expressed as whole numbers, decimals being rounded off downward.

### 4. CALCULATION OF VOLUME

- 4.1 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.
- 4.2 Volume of appendages shall be include in the total volume.
- 4.3 Volume of spaces open to the sea shall be excluded from the total volume.

### 5. DOCUMENT REQUIREMENT

The applicant must provide Lines Plan Drawing and General Arrangement (GA) Drawing.

#### 5.1 Lines Plan

Represent the shape of the hull looking from three (3) orthogonal:

- Body Plan (front view)
- Sheer Plan (side view)
- Half Breadth Plan (top view)

Without lines plan drawing, no calculation, design and analysis work can be performed.

Kindly refer to Appendix 1 – Sample for Lines Plan.

#### 5.2 General Arrangement (G.A)

Defined as the assignment of space for all the required:

- Functions and equipment
- Properly coordinates for location and access (e.g. location of wheel house, galley etc...)

Kindly refer to Appendix 2 – Sample for General Arrangement.

## 6. IMPLEMENTATION OF SURVEY FOR TONNAGE MEASUREMENT OF VESSEL

The mechanism for implementing of survey for tonnage measurement is using Form **LSS/RS/TM/01**. This form is formulated as a system on when, what and how to record data of vessel dimension based on types, sizes and plying limits (river going and domestic voyage) of vessels such as long boats, speed boats, passenger vessels, tugs and cargo vessels 15 Net Tonnage and below. And also, vessels such as long boats, speed boats, passenger vessels, tugs, cargo vessels and ferry (above 15 Net Tonnage and below) plying and operating within reservoir areas (e.g. Bakun Dam, Murum Dam, Batang Ai...etc).

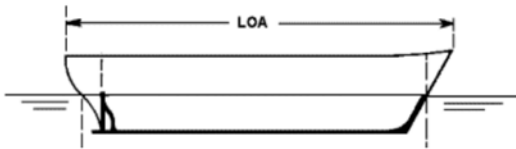
### 6.1 When to survey the vessels:-

Physical ship survey shall be done before processing any new application of River Transport Permit. Ship's owner or applicant has to be notified for physical ship survey.

### 6.2 Where are the areas to be inspected on the vessels:-

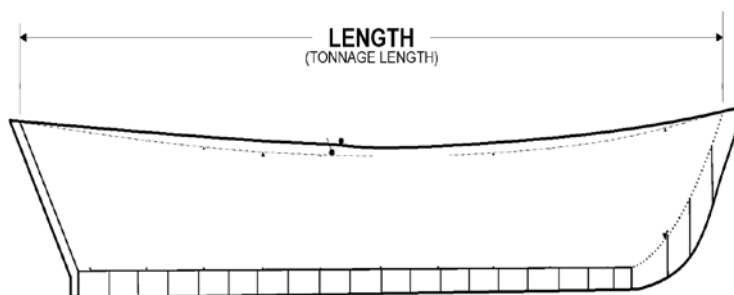
The areas cover:-

#### 6.2.1 The Length of Overall (LOA) of the vessel

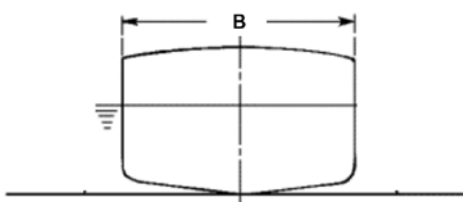


#### 6.2.2 The Length (L) of the vessel

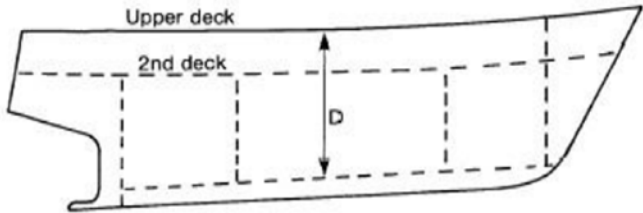
- Shall be measured on the upper side of the upper deck from the inside of the outer plate.
- This is taken as 96% of the total length on a waterline at 85% of the least moulded depth, or, as the length from the fore side of the stem to the axis of the rudder stock on that waterline, if greater.



#### 6.2.3 Breadth (B) – Maximum breadth measured at mid ship



6.2.4 Depth (D) – Moulded depth at side measured at mid ship.



6.3 How to survey the vessels:-

Physical ship survey Form **LSS/RS/TM/01** (refer to Appendix A) comprises three (3) main part. **PART 1** comprises of 5 sections as stated below:-

6.3.1 Section I – Date, Time and Place of ship survey

I. DATE, TIME AND PLACE OF SURVEY	
Date and Time of Inspection	: .....
Place of Inspection	: .....

6.3.2 Section II – Vessel Data

II. VESSEL DATA	
1. Vessel Name (if known)	: .....
2. New / Used	: .....
3. Registered / License No. (if any)	: .....
4. Place of Build	: .....
5. Year of Build	: .....
6. Address of Builder	: ..... ..... .....
7. Equipped With Engine (Inboard / Outboard):	
<b>Inboard Engine:-</b>	<b>Outboard Engine:-</b>
<input type="checkbox"/> Yes <input type="checkbox"/> No	Outboard: <input type="checkbox"/> Yes <input type="checkbox"/> No
Horse Power:.....	Horse Power:.....
Type :.....	Type :.....
Serial No. :.....	Serial No. :.....
8. Hull Identification / Hull Number	: .....
9. Hull Material:	
<input type="checkbox"/> Wood	<input type="checkbox"/> Steel
<input type="checkbox"/> Aluminium	<input type="checkbox"/> Fibrous Reinforced Plastic (e.g.: Fibreglass)
<input type="checkbox"/> Concrete	<input type="checkbox"/> Other (Please specify :.....)

**Item 1 to Item 9** – The data on this section can be obtained from plans, drawings, specifications and other documents relating to the ship (e.g. Lines Plan, General Arrangement, Builder Certificate...etc.) from the owner / the master of a ship.

### 6.3.3 Section III – Vessel Dimension

III. VESSEL DIMENSIONS		
1.	Length of Overall (LOA)	:.....meter (m) / :.....feet (ft.)
2.	Length (L)	:.....meter (m) / :.....feet (ft.)
3.	Moulded Depth (D)	:.....meter (m) / :.....feet (ft.)
4.	Moulded Breadth (B)	:.....meter (m) / :.....feet (ft.)

**Item 1 to Item 4** – The data on this section can be obtained from plans, drawings, specifications and other documents relating to the ship (e.g. Lines Plan, General Arrangement, Builder Certificate...etc.) from the owner / the master of a ship.

### 6.3.4 Section IV – Enclosed Volume / Space

IV. ENCLOSED VOLUME					
Compartment No.	Description	Length (m)	Mean Height (m)	Mean Breadth (m)	Volume (m <sup>3</sup> )
1.	Deck / Wheel House				
2.	Crew / Passenger Cabin				
3.	Engine Room				
4.	Storage				
5.	Fresh Water Tank (F.W.T)				
6.	Other (Please specify).....				

$$\text{Volume (m}^3\text{)} = \text{Length} \times \text{Mean Height} \times \text{Mean Breadth}$$

**Item 1 to Item 5** – The data on this section can be obtained from plans, drawings, specifications and other documents relating to the ship (e.g. Lines Plan, General Arrangement (G.A) Plan, Builder Certificate...etc.) from the owner / the master of a ship.



## 7. FREEBOARD

The freeboard assigned is the distance measured vertically downward amidships from the upper edge of the deck line to the upper edge of the related load line.

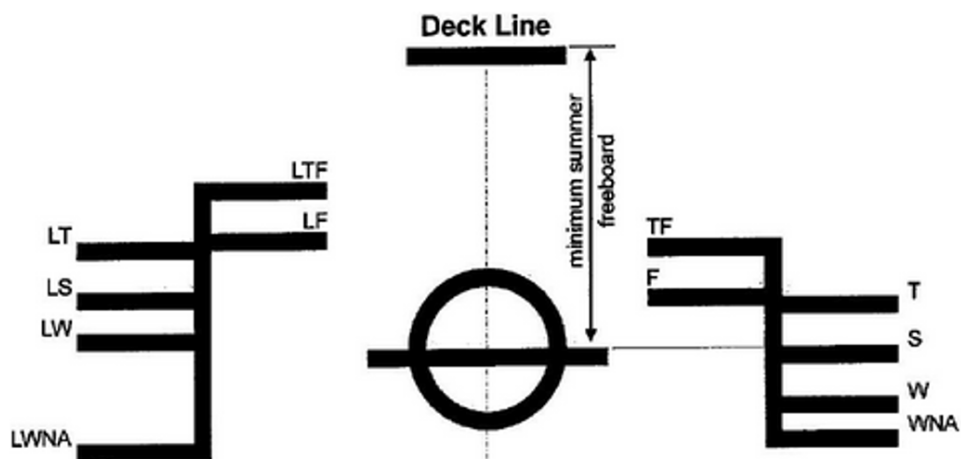
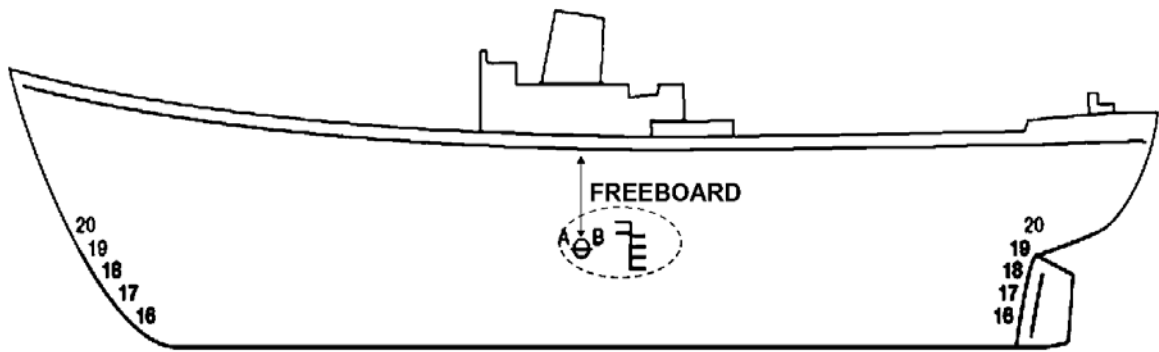
### 7.1 Freeboard Deck

Normally is the uppermost continuous deck having permanent means of closing all exposed opening or lower deck provided it is complete and permanent deck continuous throughout the ship length or at least between machinery space and peak bulkheads, and continuous athwartships.

### 7.2 Freeboard Mark (Plimsoll)

Compulsory mark that is located on both sides of the ship at midship showing the exact position of minimum summer load lines draught / draft and other seasonal draughts.

Summer Load Line Draught (d) – this will determine the centre of Freeboard Mark (Upper edge of Summer Load Line)



Note:

<b>LT</b>	- Tropical Timber Load Line	<b>LF</b>	- Fresh Water Timber Load Line
<b>LS</b>	- Summer Timber Load Line	<b>T</b>	- Tropical Load Line
<b>LW</b>	- Winter Timber Load Line	<b>S</b>	- Summer Load Line
<b>LWNA</b>	- Winter North Atlantic Timber Load Line	<b>W</b>	- Winter Load Line
<b>LTF</b>	- Tropical Fresh Water Timber Load Line	<b>WNA</b>	- Winter North Atlantic Load Line

### 7.3 Freeboard Formula

#### 7.3.1 Freeboard Formula for Ship $24M \leq \text{Length (L)}$

$$F = 50 + [(150 \times \text{Length}) / 24]$$

Where;

L = length of ship in Meter (M)

F = freeboard in Millimetre (mm)

Or

Depth (D) x 1/3 (Open Boat)

Depth (D) x 1/4 (Vessel with Enclosed Volume)

**Note:** Calculation in meter (m)

#### 7.3.2 Section V - Freeboard

##### V. FREEBOARD

Freeboard (F) = Depth (D) x 1/3 (Open Speed Boat / Open Long Boat / Penambang)

or

Depth (D) x 1/4 (Vessel with Enclosed Volume)

= .....  
(The minimum freeboard is 8 inches or 203 mm)

**Note:** Calculation in meter (m)

## 8. CHECKLIST FOR SURVEY AND INSPECTION OF VESSEL

The checklist for survey and inspection of vessel for **PART 2** comprises of 6 sections as stated below:-  
(This guideline is adopted from Standard Operating Procedures [SOP] Guidelines on Survey and Inspection of Vessel – For Application and Renewal of River Transport Permit [RTP])

### 8.1 Life Saving Appliance (LSA)

I. LIFE SAVING APPLIANCES (LSA)			
No.	List of LSA	Available On board	Remarks/Location
1	Lifejacket		
2	Lifebuoy		
3	Buoyancy Tank		
4	Life Raft – Serial No. And Capacity (if any)		
5	Horn		
6	Whistle		

### 8.2 Fire Fighting Equipment (FFE)

II. FIRE FIGHTING EQUIPMENT (FFE)			
No.	List of FFA	Available On board	Remarks/Location
1	Portable Fire Extinguisher		
2	Fire - Hydrant		
3	Fire Bucket		

### 8.3 Light and Sound Signal Appliance (LSSA)

III. LIGHT AND SOUND SIGNAL APPLIANCE (LSSA)			
No.	List of LSSA	Available On board	Remarks/Location
1	Masthead Light		
2	Port Light		
3	Starboard Light		
4	Stern Light		
5	Anchor Light (if any)		
6	Not-Under-Command Lights		
7	Not-Under-Command Shapes		
8	Signalling Lights / Flashing Lights		
9	Torch Light		

## 8.4 Emergency Doors

IV. EMERGENCY DOORS					
No	Type	No.	Location	Size *(L x B)	Remarks
1	Push Out – ( )				
	Sliding – ( )				
	Roof Top – ( )				
	Others – ( )				

## 8.5 Permanent marking

V. PERMANENT MARKING		
Name of Vessel: .....	RTP No.: .....	Emergency Door: .....
Official No. .....	Passengers Limit / Had Penumpang: .....	Load Line Marking: .....

## 8.6 Summary On Condition Of Vessel

VI. SUMMARY ON CONDITION OF VESSEL	
Overall Recommendations on the of the vessel	* ( ) this vessel is <b>Safe</b> and in Operational Condition to carry Passenger / Cargo.
	* ( ) this vessel is <b>Not Safe</b> and in Operational Condition to carry Passenger / Cargo.

## 9. INSPECTED BY THE FOLLOWING OFFICER(S)

This section in **PART 3** require the name, designation and signature of Sarawak Rivers Board's officers that carry out tonnage measurement, survey and physical inspection of the vessel.

NAME	DESIGNATION	SIGNATURE
.....	.....	.....
.....	.....	.....

## 10. SAMPLE FOR TONNAGE CALCULATION

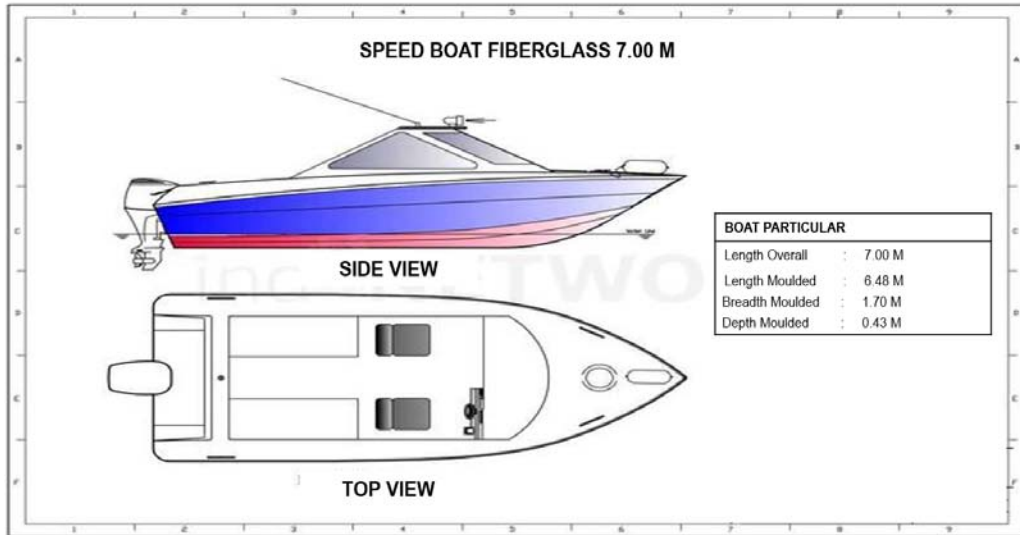
### Example 1:

Type of Vessel : Open Speed Boat  
 Material of hull (M) : GRP [0.0018]

Measure:-

Length (L) : 6.48m / 21.26ft  
 Breadth (B) : 1.70m / 5.58ft  
 Depth (D) : 0.43m / 1.41ft

Sample of open speed boat plan:-



### Step 1:

The Girth (G) shall be ascertained by adding the aforesaid breadth of the ship to twice the depth of the ship from the top of the upper deck at the side of the ship to the bottom of the keel and multiplying this sum by 0.98.

**Note:** Calculation in feet (ft.)

$$\begin{aligned}
 \text{(i) Girth (G)} &= (B+2D) \times 0.98 \\
 &= (5.58\text{ft} + [2 \times 1.41\text{ft}]) \times 0.98 \\
 &= (5.58\text{ft} + 2.82) \times 0.98 \\
 &= \underline{8.23\text{ft}}
 \end{aligned}$$

### Step 2:

Calculate vessel Gross Tonnage (GRT)

**Note:** Calculation in feet (ft.)

$$\begin{aligned}
 \text{(ii) GRT} &= \left[ \frac{B+G}{2} \right]^2 \times \text{Length (L)} \times \text{Material (M)} \\
 &= \left[ \frac{5.58\text{ft} + 8.23\text{ft}}{2} \right]^2 \times 21.26 \times 0.0018 \text{ (GRP)} \\
 &= 47.68 \times 21.26 \times 0.0018 \\
 &= 1.82 \text{ (Gross tonnages shall be expressed as whole number, decimals being rounded off downwards)} \\
 &\text{So, Gross tonnage for this vessel is 1 Ton or GRT = 1 Ton.}
 \end{aligned}$$

### Step 3:

Net Tonnage (NRT)

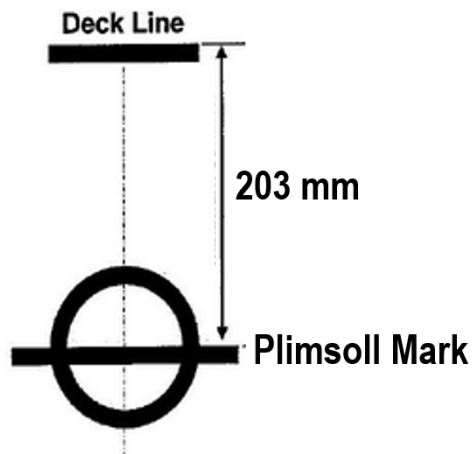
- (iii) NRT - This speed boat do not have any enclosed volume (e.g. deck house, engine room..etc). So, Net tonnage for this vessel is **1 Ton** or **NRT = 1 Ton**.

### Step 4:

Freeboard (F)

**Note:** Calculation in meter (m)

- (iv) Freeboard (F) =  $D \times 1/3$  (Open Speed Boat)  
=  $0.43 \text{ M} \times 1/3$   
=  $0.143 \text{ M}$  or  $143 \text{ mm}$  (The freeboard is less than 8 inches or  $<203 \text{ mm}$ . The minimum freeboard is 8 inches or  $203 \text{ mm}$ .)  
= **203 mm**  
(For this case, the freeboard shall be  $203 \text{ mm}$ ).



### Example 2:

Type of Vessel : Open Boat (Long Boat)

Material of hull (M) : Wood [0.0017]

Measure:-

Length (L) : 12.15m / 39.85ft

Breadth (B) : 1.45m / 4.76ft

Depth (D) : 0.68m / 2.23ft

Sample of open boat :-



### Step 1: Girth (G)

Note: Calculation in feet (ft.)

$$\begin{aligned} \text{(i) Girth (G)} &= (B+2D) \times 0.98 \\ &= (4.76\text{ft} + [2 \times 2.23\text{ft}]) \times 0.98 \\ &= (4.76\text{ft} + 4.46) \times 0.98 \\ &= \underline{9.04\text{ft}} \end{aligned}$$

### Step 2: Gross Tonnage (GRT)

Note: Calculation in feet (ft.)

$$\begin{aligned} \text{(ii) GRT} &= \left[ \frac{B+G}{2} \right]^2 \times \text{Length (L)} \times \text{Material (M)} \\ &= \left[ \frac{4.76\text{ft} + 9.04\text{ft}}{2} \right]^2 \times 39.85 \times 0.0017 \text{ (Wood)} \\ &= 47.61 \times 39.85 \times 0.0017 \\ &= 3.22 \text{ (Gross tonnages shall be expressed as whole number, decimals being rounded off downwards)} \\ &\text{So, Gross tonnage for this vessel is } \mathbf{3 \text{ Ton or GRT} = 3 \text{ Ton}}. \end{aligned}$$

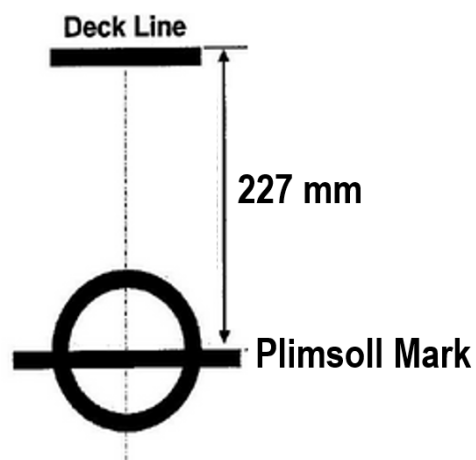
### Step 3: Net Tonnage (NRT)

- (iii) NRT - This speed boat do not have any enclosed volume (e.g. deck house, engine room..etc). So, Net tonnage for this vessel is **3 Ton** or **NRT = 3 Ton**.

### Step 4: Freeboard (F)

Note: Calculation in meter (m)

- (iv) Freeboard (F) =  $D \times 1/3$  (Open boat)  
=  $0.68 \text{ M} \times 1/3$   
=  $0.227 \text{ M}$  or  $227 \text{ mm}$





### Example 3:

Type of Vessel : Tug Boat  
 Material of hull (M) : Steel [0.0018]

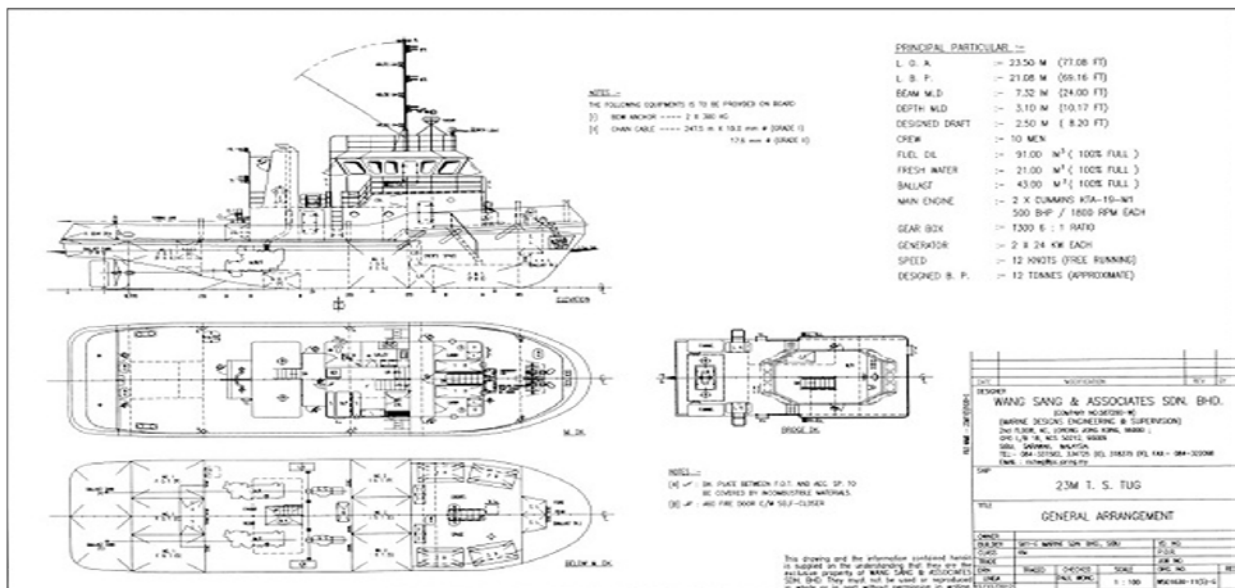
Measure:-

Length Overall (LOA) : 15.00m / 49.2ft  
 Length Moulded (L) : 14.51m / 47.59ft  
 Breadth Moulded (B) : 3.00m / 9.84ft  
 Depth Moulded (D) : 1.30m / 4.26ft

Enclosed Volume / Space :-

Compartment No.	Description	Length (m)	Mean Height (m)	Mean Breadth (m)	Volume (m <sup>3</sup> )
1.	Deck House	3.00	2.00	2.00	12m <sup>3</sup>
2.	Engine Room	5.52	2.21	3.01	36.72m <sup>3</sup>
3.	Fresh Water Tank	3.30	1.30	3.00	12.87m <sup>3</sup>
4.	Funnel (Chimney)	1.00	2.00	0.30	0.6m <sup>3</sup>

Sample of Tugboat General Arrangement (G.A) plan:-



## Step 2: Gross Tonnage (GRT)

Note: Calculation in feet (ft.)

$$\begin{aligned} \text{(ii) GRT} &= \left[ \frac{B+G}{2} \right]^2 \times \text{Length (L)} \times \text{Material (M)} \\ &= \left[ \frac{9.84\text{ft} + 17.99\text{ft}}{2} \right]^2 \times 47.59 \times 0.0018 \\ &= \underline{16.59} \end{aligned}$$

(This vessel comprise enclosed volume (e.g. deck house, engine room, fresh water tank and funnel). So, the calculation should take into account of the Volume Under Deck and Volume Upper Deck)

$$\begin{aligned} \text{(iii) Volume Under Deck} &= \text{GRT} \times 2.83\text{m}^3 \quad (2.83\text{m}^3 = 1000 \text{ cubic feet}) \\ &= 16.59 \times 2.83\text{m}^3 \\ &= \underline{46.95\text{m}^3} \end{aligned}$$

$$\begin{aligned} \text{(iv) Volume Upper Deck} &= \text{Deck House} + \text{Engine Room} + \text{Fresh Water Tank} + \text{Funnel} \\ &= 12\text{m}^3 + 36.72\text{m}^3 + 12.87\text{m}^3 + 0.6\text{m}^3 \\ &= \underline{62.19\text{m}^3} \end{aligned}$$

Note: Calculation in meter (m)

$$\begin{aligned} \text{(v) Volume Under Deck +} &= 46.95\text{m}^3 + 62.19\text{m}^3 \\ \text{Volume Upper Deck} &= \underline{109.14\text{m}^3} \end{aligned}$$

Note: Calculation in meter (m)

$$\begin{aligned} K_1 &= 0.2 + 0.02 (\text{Log}^{10} V) \\ &= 0.2 + 0.02 (\text{Log}^{10} 109.14\text{m}^3) \\ &= 0.24076 \times 109.14\text{m}^3 \end{aligned}$$

$$\text{GRT} = \underline{26.28}$$

(Gross Tonnage [GRT] for this vessel is 26.28)

**Step 3:**

Net Tonnage (NRT)

$$(vi) \text{ NRT} = 0.3 \times 26.28$$

$$= \underline{7.9}$$

(Net Tonnage [NRT] for this vessel is 7.9)

**Step 4:**

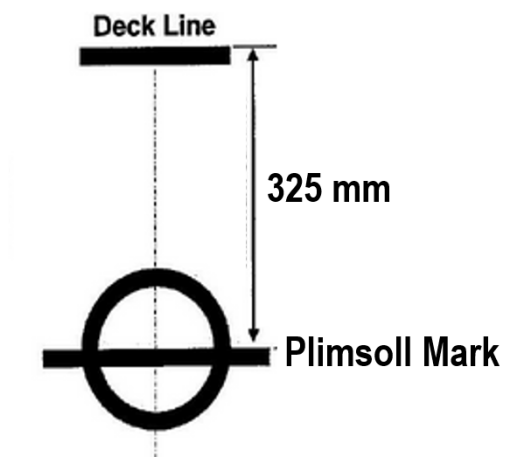
Freeboard (F)

**Note:** Calculation in meter (m)

$$(vii) \text{ Freeboard (F)} = D \times 1/4 \text{ (Vessel with enclosed volume)}$$

$$= 1.30 \text{ M} \times 1/4$$

$$= 0.325 \text{ M or } 325 \text{ mm}$$





## LEMBAGA SUNGAI-SUNGAI SARAWAK

### TONNAGE MEASUREMENT FORM

#### PART 1: PARTICULAR OF VESSELS AND TONNAGE MEASUREMENT

##### VI. DATE, TIME AND PLACE OF SURVEY

Date and Time of Inspection : .....

Place of Inspection : .....

##### VII. VESSEL DATA

1. Vessel Name (if known) : .....
2. New / Used : .....
3. Registered / License No. (if any) : .....
4. Place of Build : .....
5. Year of Build : .....

6. Address of Builder : .....

.....

.....

7. Equipped With Engine (Inboard / Outboard):

**Inboard Engine:-**

Yes  No

**Outboard Engine:-**

Yes  No

Horse Power:.....

Type :.....

Serial No. :.....

Horse Power:.....

Type :.....

Serial No. :.....

8. Hull Identification / Hull Number : .....

9. Hull Material:

Wood  Steel  Aluminium  Fibrous Reinforced Plastic (e.g.: Fibreglass)

Concrete  Other (Please specify :.....)

VIII. VESSEL DIMENSIONS		
1.	Length of Overall (LOA)	:.....meter (m) / :.....feet (ft.)
2.	Moulded Length (L)	:.....meter (m) / :.....feet (ft.)
3.	Moulded Depth (D)	:.....meter (m) / :.....feet (ft.)
4.	Moulded Breadth (B)	:.....meter (m) / :.....feet (ft.)

IX. ENCLOSED VOLUME					
Compartment No.	Description	Length (m)	Mean Height (m)	Mean Breadth (m)	Volume (m <sup>3</sup> )
1.	Deck House				
2.	Crew / Passenger Cabin				
3.	Engine Room				
4.	Storage				
5.	Fresh Water Tank (F.W.T)				
6.	Other (Please specify).....				

$$\text{Volume (m}^3\text{)} = \text{Length} \times \text{Mean Height} \times \text{Mean Breadth}$$

Note: Only for vessel / boat have compartment and enclosed volume. Not apply to Open Boat, Long Boat or Open Speed Boat.

X. FREEBOARD	
Freeboard (F)	= Depth (D) x 1/3 (Open Speed Boat / Open Long Boat / Penambang) or Depth (D) x 1/4 (Vessel with Enclosed Volume) = ..... (The minimum freeboard is 8 inches or 203 mm)
<b>Note:</b> Calculation in meter (m)	

**PART 2: LIFE SAVING APPLIANCES, FIRE FIGHTING EQUIPMENT, LIGHT AND SOUND APPLIANCES, EMERGENCY DOORS, PERMANENT MARKING, CONDITION OF VESSEL**

<b>VII. LIFE SAVING APPLIANCES (LSA)</b>			
<b>No.</b>	<b>List of LSA</b>	<b>Available On board</b>	<b>Remarks/Location</b>
1	Lifejacket		
2	Lifebuoy		
3	Buoyancy Tank		
4	Life Raft – Serial No. And Capacity (if any)		
5	Horn		
6	Whistle		

<b>VIII. FIRE FIGHTING EQUIPMENT (FFE)</b>			
<b>No.</b>	<b>List of FFA</b>	<b>Available On board</b>	<b>Remarks/Location</b>
1	Portable Fire Extinguisher		
2	Fire – Hydrant		

<b>IX. LIGHT AND SOUND SIGNAL APPLIANCE (LSSA)</b>			
<b>No.</b>	<b>List of LSSA</b>	<b>Available On board</b>	<b>Remarks/Location</b>
1	Masthead Light		
2	Port Light		
3	Starboard Light		
4	Stern Light		
5	Anchor Light (if any)		
6	Not-Under-Command Lights		
7	Not-Under-Command Shapes		
8	Signalling Lights / Flashing Lights		
9	Torch Light		

X. EMERGENCY DOORS					
No	Type	No.	Location	Size *(L x B)	Remarks
1	Push-Out – (    ) Sliding – (    ) Roof Top – (    ) Others – (    )				

XI. PERMANENT MARKING		
Name of Vessel: .....	RTP No.: .....	Emergency Door: .....
Official No. .....	Passengers Limit / Had Penumpang: .....	Load Line Marking: .....

XII. SUMMARY ON CONDITION OF VESSEL	
Overall Recommendations on the of the vessel	* (    ) this vessel is <b>Safe</b> and in Operational Condition to carry Passenger / Cargo.
	* (    ) this vessel is <b>Not Safe</b> and in Operational Condition to carry Passenger / Cargo.

\* Note: Please (√) which is applicable

**PART 3: NAME, DESIGNATION AND SIGNATURE OF SRB'S OFFICER THAT CARRY OUT TONNAGE MEASUREMENT, SURVEY AND PHYSICAL INSPECTION OF THE VESSEL**

NAME	DESIGNATION	SIGNATURE
.....	.....	.....
.....	.....	.....