

# SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, Sailing Ship, Tanker

having *Bridge and forecastle deck and also a steel deck house enclosing rudder quadrant & hand steering gear aft.*  
(Type of Superstructures.)

Port of Survey *Halmstad*

Date of Survey *7th April, 1932*

Name of Surveyor *O. Lundén*

Particulars of Classification *100 A1*

Ship's Name  
*S/S "LIANA"*

Nationality and Port of Registry  
*Swedish  
Lerberg.*

Official Number  
*3204*

Gross Tonnage  
*1646*

Date of Build  
*1898-4 mo.*

Moulded Dimensions: Length *265*

Breadth *38.5*

Depth *19.73*

Moulded displacement at moulded draught = 85 per cent. of moulded depth

*3833*

tons

Coefficient of fineness for use with Tables

*.787*

## Depth for Freeboard (D)

Moulded depth ... *19.73*

Stringer plate ... *.05*

Sheathing on exposed deck

$$T \left( \frac{L-S}{L} \right) =$$

Depth for Freeboard (D) = *19.78*

## Depth correction

(a) Where D is greater than Table depth  
(D - Table depth) R =

$$(19.78 - 17.67) 2.038 = + 4.30"$$

(b) Where D is less than Table depth (if allowed)  
(Table depth - D) R =

If restricted by superstructures ☒

## Round of Beam correction

Moulded Breadth (B) ... *38.5*

Standard Round of Beam =  $\frac{B \times 12}{50}$  = *9.20*

Ship's Round of Beam = *9.2*

Difference *.30*

Restricted to ☒

$$\text{Correction} = \frac{\text{Diff}}{4} \times (1 - \frac{S_1}{L}) = \frac{.30}{4} (1 - .379) = -.05$$

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S) FT	Equivalent Enclosed Length (S <sub>1</sub> )	Height FT	Height Correction	Effective Length (E)
Poop enclosed ...					
" overhang ...					
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...	<i>68.0</i>	<i>68.00</i>	<i>7.0</i>		<i>68.00</i>
" overhang aft ...					
" overhang forward	<i>2.0</i>	<i>1.00</i>			<i>1.00</i>
Forecastle enclosed ...	<i>31.0</i>	<i>31.12</i>	<i>7.25</i>		<i>31.12</i>
" overhang at centre	<i>2.83</i>	<i>.35</i>			<i>.35</i>
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" forward					
Total ...	<i>101.83</i>	<i>100.47</i>			<i>100.47</i>

Standard Height of Superstructure *6.15*

" " R.Q.D. ...

Deduction for complete superstructure *32.50*

Percentage covered  $\frac{S}{L} =$  *38.43%*

"  $\frac{S_1}{L} =$  *37.91%*

"  $\frac{E}{L} =$  *37.91%*

Percentage from Table, Line A. (corrected for absence of forecastle (if required)) ☒

Percentage from Table, Line B. (corrected for absence of forecastle (if required)) *25.72%*

Interpolation for bridge less than 2L (if required) *.2572*

Deduction =  $32.50 \times .2572 = - 8.36"$

## SHEER CORRECTION.

Station	Standard Ordinate	S M	Product	Actual Ordinate	Effective Ordinate	S M	Product
A.P. ...	<i>36.50</i>	<i>1</i>	<i>36.50</i>	<i>46.5</i>	<i>46.50</i>	<i>1</i>	<i>46.50</i>
$\frac{1}{4}$ L from A.P. ...	<i>16.24</i>	<i>4</i>	<i>64.96</i>	<i>20.0</i>	<i>20.14</i>	<i>4</i>	<i>80.56</i>
$\frac{2}{4}$ L " ...	<i>4.02</i>	<i>2</i>	<i>8.04</i>	<i>4.9</i>	<i>5.03</i>	<i>2</i>	<i>10.06</i>
Amidships ...	<i>✓</i>	<i>4</i>	<i>✓</i>	<i>0</i>	<i>✓</i>	<i>4</i>	<i>✓</i>
$\frac{3}{4}$ L from F.P. ...	<i>8.03</i>	<i>2</i>	<i>16.06</i>	<i>8.2</i>	<i>8.10</i>	<i>2</i>	<i>16.20</i>
$\frac{1}{4}$ L " ...	<i>32.49</i>	<i>4</i>	<i>129.96</i>	<i>33</i>	<i>32.39</i>	<i>4</i>	<i>129.56</i>
F.P. ...	<i>73.00</i>	<i>1</i>	<i>73.00</i>	<i>74.5</i>	<i>74.50</i>	<i>1</i>	<i>74.50</i>
Total ...			<i>328.52</i>				<i>357.38</i>

Mean actual sheer aft = *6.0000*  
Mean standard sheer aft = *6.0000*

Mean actual sheer forward = *6.0000*  
Mean standard sheer forward = *6.0000*

Length of enclosed superstructure forward of amidships = *.119*

" " aft of " = *.138*

$$\text{Correction} = \frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = \frac{28.86}{18} (.75 - .1921) = -.89"$$

If limited on account of midship superstructure.

If limited to maximum allowance of  $1\frac{1}{2}$  ins. per 100 ft.

Deduction for Tropical Freeboard.  
Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = *19.78*  
Summer freeboard = *2.77*  
Moulded draught (d) = *17.01*

Deduction for Tropical freeboard and addition for

Winter freeboard =  $\frac{d}{4}$  inches = *4.25*

Addition for Winter North Atlantic Freeboard (if required) = *2*

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$  *3920*

Tons per inch immersion at summer load water line

T = *21.25*

Deduction =  $\frac{\Delta}{40T}$  inches

= *4.61*

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

$$\frac{.68 + .787}{1.36} = \frac{1.467}{1.36}$$

Depth Correction ... *4.30*

Deduction for superstructures ... *8.36*

Sheer correction ... *.89*

Round of Beam correction ... *.05*

Correction for Thickness of Deck amidships ...

Other corrections, scantlings, etc. ...

Summer Freeboard = *33.24*

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:—

Tropical Fresh Water Line above Centre of Disc ...	<i>8.86</i>	=	<i>225</i>	Tropical Fresh Water Freeboard ...	<i>24.38</i>
Fresh Water Line " " ...	<i>4.61</i>	=	<i>117</i>	Fresh Water " " ...	<i>28.63</i>
Tropical Line " " ...	<i>4.25</i>	=	<i>108</i>	Tropical " " ...	<i>28.99</i>
Winter Line below " " ...	<i>4.25</i>	=	<i>108</i>	Winter " " ...	<i>37.49</i>
Winter North Atlantic Line " " ...	<i>6.25</i>	=	<i>159</i>	Winter North Atlantic " " ...	<i>39.49</i>

MARKING FORM

RECEIVED 8 - SEP 1932

*W444-0112 (1/3)*



Description of Hatchway		1	2	3	4
Dimensions of Hatchway		30' x 14'-2"	24' x 14'-2"	26' x 3' C4' x 13'	3' x 2'
COAMINGS	Height above Deck	32"	30"	15"	31"
	Thickness	44"	40"	40"	44"
	Stiffeners	None	None	None	None
	Brackets, Stays	1 each side	1 each side	None	None
HATCH BEAMS	Number	1	2	2	2
	Spacing	10'	8'	8'	8'
	Scantling and Sketch	3x3x44	3x3x44	3x3x44	3x3x44
	Bearing Surface	3	3	3	3
FORE AND AFTERS	Number	3	3	3	3
	Spacing	3.54'	3.54'	3.54'	3.54'
	Unsupported Lengths	9.67'	7.67'	7.67'	7.67'
	Scantling and Sketch	3x3x44	3x3x44	3x3x44	3x3x44
HATCH COVERS	Material	Wood	Wood	Wood	Wood
	Thickness	2 3/4"	2 3/4"	2 3/4"	2 3/4"
	How fitted	Atmospheric	Atmospheric	Atmospheric	Atmospheric
	Bearing Surface	3	3	3	3
Spacing of Cleats		23" to 24"	24"	15"	2"
Number of Tarpaulins		3	3	3	3

\*Are wood fore and afters steel shod at all bearing surfaces? *Yes*  
 Are battens and wedges efficient and in good condition? *Yes*  
 Are tarpaulins in good condition and in accordance with rule requirements? *Yes*  
 Are lashings provided in accordance with rule requirements? *3 ring bolts each sides and 2 ring bolts & 2 eye bolts each end.*

Particulars of Flush Bunker Scuttles: *None*

Particulars of Companionways: *On fore deck: Plate 40  
 Doors 3'-9" x 3'-4" manipulated from both sides.  
 Hgt. of sill 15".*

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:  
*Fore deck: 3 of 6" diam. Hgt. 16". Thicker. 32. 2 of 9" diam. Hgt. 12". Thicker. 32.  
 1 of 16" diam. Hgt. 24". Thicker. 40.  
 3 of 14" diam. Hgt. 36". Thicker. 40. 1 of 6" diam. Hgt. 31". Thicker. 32.  
 Bridge deck: 2 of 11" Hgt. 26". Thicker. 40. means of closing provided*

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks: *Goose-neck air pipes in wells 40" hgt.  
 no means for closing.  
 Air pipes on bridge deck flush with deck and fitted with brass screw plugs.  
 means of closing provided*

Particulars of Gangway Cargo and Coaling Ports: *Two cargo ports are fitted in each bridge and bulkheads.  
 Particulars of under superstructures.  
 No ports in ship's sides.*

Particulars of Side Scuttles: *No side scuttles below foreboard deck.  
 Side lights in cross quarters (fore) fitted with permanently attached inside deadlights.*

Particulars of Guard Rails: *Open rail round fore deck.  
 Bridge deck bulkheads 36" high.*

Particulars of Gangways, Lifelines, etc.: *None.  
 Lifelines fitted in forward well.*

Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well	96'	46"	26" x 12.5"	3	6.80"	19.20"
Forward Well	66'	46"	26" x 12.5"	3	6.80"	13.20"

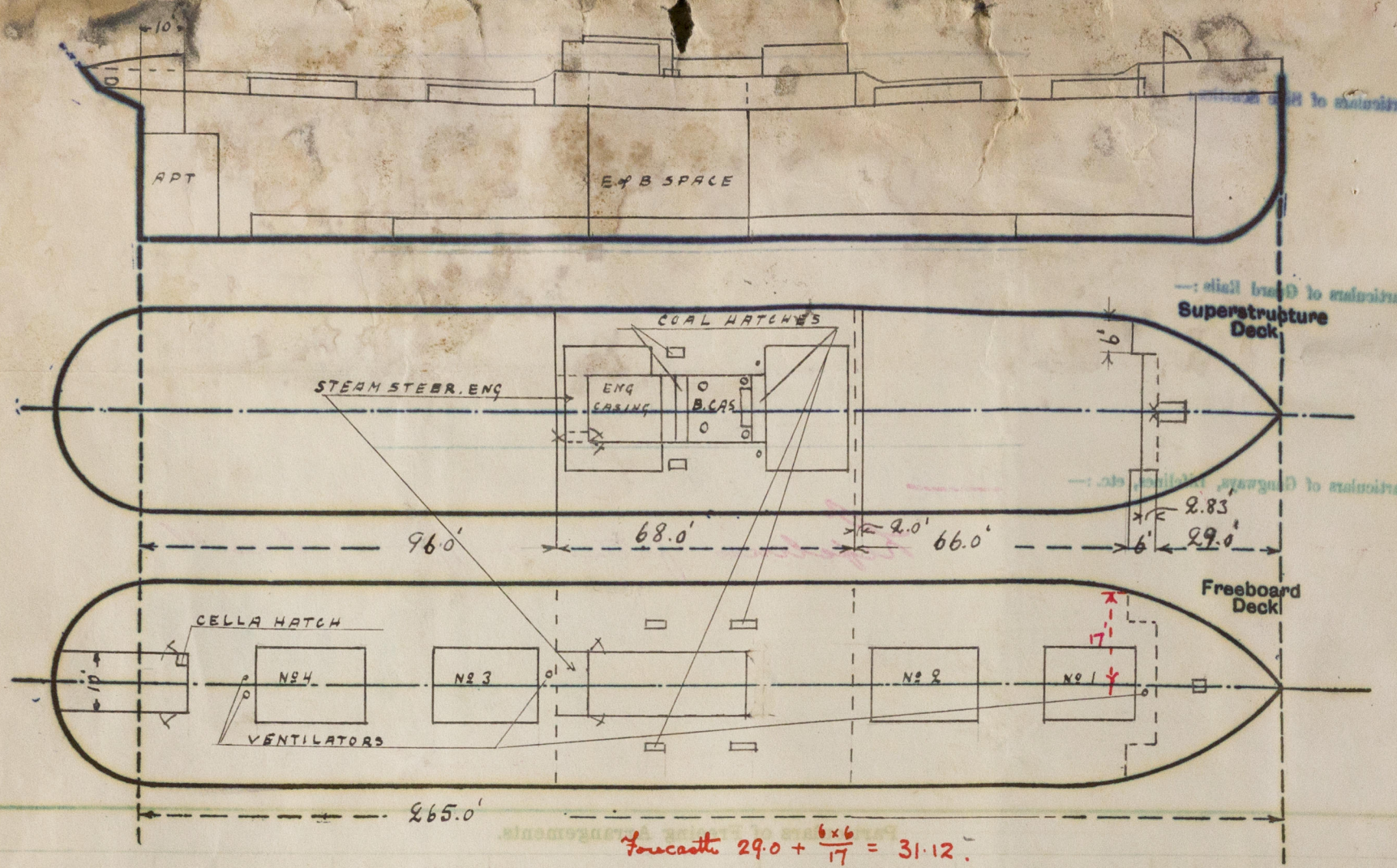
State position of each freeing port ... After Well: Bridge end 11' 27' 27' 27'  
 (F. and A. position and height above deck edge) Forward Well: 19' 19' 19' 19'  
 State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such: *fitted with shutters no bars.  
 Hgt. above deck edge 11".*  
 Additional area where sheer is less than standard.

Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead								
Raised Quarter Deck Bulkhead								
Bridge, After Bulkhead		30	3" x 3" x 36" L	30"	✓	6'-9" x 3'-0"	None	7'
Bridge, Forward Bulkhead	20" x 40	34	8 x 3 x 40 L	30"	Plates T & B	2'-1" x 2'-0"	45"	7'
Forecastle Bulkhead	20 x 34	30 - 32	3 x 3 x 36 L	30"	✓	4'-4" x 1'-8"	19"	7.25
Trunk, Aft								
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks								
Exposed Machinery Casings on Superstructure Decks	31" x 40	Top plating 34	✓	✓	✓	Adding open on top		31"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	24 x 44	30	3 x 3 x 40 L	25-40	✓	4' x 1'-9"	17	Front at C
Deckhouses		28	3 x 3 x 40 L	30"	Plates T & B	5' x 2'-6"	18"	7'

Particulars of Closing Appliances (state if capable of being manipulated from both sides).  
 Poop Bulkhead ...  
 Raised Quarter Deck Bulkhead ...  
 Bridge, After Bulkhead ... *Portable plates and hook bolts 1" diam. spaced 14"-15" apart.*  
 Bridge, Forward Bulkhead ... *Hinged steel plates and hook bolts 1/2" diam. spaced 8"-14" apart.*  
 Forecastle Bulkhead ... *Hinged steel door capable of being manipulated from both sides.*  
 Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...  
 Exposed Machinery Casings on Superstructure Decks ...  
 Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... *These doors are, as stated, never used.*  
 Deckhouses ... *Hinged steel doors capable of being manipulated from both sides.*

W144-012 (23)





$\text{Forecastle } 29.0 + \frac{6 \times 6}{17} = 31.12$   
 $\text{Overhang} = 31.83 - 31.12 = .71$

State any special features in the construction of the ship:—

Particulars of Superstructure, Tanks, Coamings, Deckhouses	Quantity	Material	Remarks
Top Bulwark	...	...	...
Side Bulwark	...	...	...
Bridge Bulwark	...	...	...
Fore Bulwark	...	...	...
After Bulwark	...	...	...
Foremast	...	...	...
Mainmast	...	...	...
Mizzenmast	...	...	...
Foremast	...	...	...
Mainmast	...	...	...
Mizzenmast	...	...	...

Builder's name and yard number *W. Gray & Co. Ltd. W. Hartlepool.*

Names of sister ships *Rederi AB. Lerberg, Lerberg.*

Fee *£170.00*  
 Trans. exp. *£38.55*

Received by me

*LINEA of ...*

The deck house aft is as described and shown on Apt. C.11.  
 Longitudinal subdivision of D.B. tanks:-  
 It was stated that the centre girder of No 3 bottom tank had been made watertight at the last Special Survey at Gothenburg in January last and that an additional centre section and additional air and sounding pipes had been fitted. (Tank filled with water at the occasion of this survey).

Bulwarks:-  
 Height of bulwarks in wells 46". Main rail  $6\frac{1}{2} \times 3 \times 40$  bulb angle. Flays  $8\frac{1}{2} \times 48$  bulb plate spaced about 6' apart and connected to stinger plate, bulwark plating and to main rail by double lugs.

Fittings fore uprights:-  
 Double fore and after angle lugs,  $3 \times 4 \times 50$ ,  $3\frac{1}{2}$  between are riveted to stinger plates in the wells and spaced 8' to 11' apart. The lugs are 18" in length. *all to Convention requirements*

Eye plates for lashings:-  
 No eye plates for lashings are fitted but holes for shackle bolts are taken in the bulwark bulb plate stays. *Lashing to Convention requirements*  
 The steering chains and rods are carried along the bulwarks aft, in the deck between bulwark plating and stays are not specially protected. A hand steering gear, in good condition, is fitted aft, enclosed by a steel deck house.

It was impossible to obtain at this occasion the dimensions and scantlings of the <sup>coal</sup> hatches in the freeboard deck as the bridge truss deck space was partly filled with coal, but the height of the coamings is 15" and the other scantlings appears to be the same as of the side coal hatches on the bridge deck.

The moulded displacement at a moulded draught = 85% of the moulded depth, displacement in salt water and tons per inch immersion at summer load line is not obtainable but a loading scale is enclosed.

*Asunder*