

Lloyd's Register of Shipping.  
SURVEYS FOR FREEBOARD.

\* now of Stockholm. 2/3/32

Computation of Freeboard for Steamer, Sailing Ship, Tanker					Port of Survey <i>Göteborg</i>	
having <i>Poop and Forecastle</i>					Date of Survey <i>5 July 1932</i>	
(Type of Superstructures.)					Name of Surveyor <i>G. Hjörngren</i>	
Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build	Particulars of Classification <i>* 100 A.1.</i>	
<i>M/S PAN GOTHIA</i>	<i>Swedish</i>	<i>7785</i>	<i>10409</i>	<i>1931</i>	<i>Carrying Petroleum in bulk</i>	
Moulded Dimensions: Length	Breadth	Depth				
<i>487'-6"</i>	<i>64'-0"</i>	<i>38'-2"</i>				
Moulded displacement at moulded draught = 85 per cent. of moulded depth					tons	
<i>23565</i>						
Coefficient of fineness for use with Tables					<i>.815</i>	
Depth for Freeboard (D)			Depth correction		Round of Beam correction	
Moulded depth ... .. <i>38.16</i>			(a) Where D is greater than Table depth (D - Table depth) R =		Moulded Breadth (B) <i>64.0</i>	
Stringer plate ... .. <i>.06</i>			<i>(38.22 - 32.50) 3 = + 17.16</i>		Standard Round of Beam = $\frac{B \times 12}{50} = 15.36$	
Sheathing on exposed deck			(b) Where D is less than Table depth (if allowed) (Table depth - D) R =		Ship's Round of Beam = <i>15.75</i>	
$T \left( \frac{L-S}{L} \right) =$			If restricted by superstructures		Difference = <i>.39</i>	
Depth for Freeboard (D) = <i>38.22</i>					Restricted to	
					Correction = $\frac{\text{Diff}^e}{4} \times \left( 1 - \frac{S_1}{L} \right) = \frac{.39}{4} (1 - .30) = -.07$	

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop-enclosed ... ..	<i>103.10</i>	<i>103.10</i>	<i>8'-0"</i>		<i>103.10</i>	Standard Height of Superstructure <i>4.50</i>
... overhang ... ..						" " R.Q.D. ... ..
R.Q.D. enclosed ... ..						Deduction for complete superstructure <i>42.00</i>
... overhang ... ..						Percentage covered $\frac{S}{L} = 30.06$
Bridge enclosed ... ..						" " $\frac{S_1}{L} = 30.06$
... overhang aft ... ..						" " $\frac{E}{L} = 30.06$
... overhang forward						Percentage from Table, Line A. <i> tanker 21.06</i>
File enclosed <i>Equival</i> ...	<i>43.42</i>	<i>43.42</i>	<i>8'-0"</i>		<i>43.42</i>	(corrected for absence of forecastle (if required))
... overhang ... ..						Percentage from Table, Line B.
Trunk aft ... ..						(corrected for absence of forecastle (if required))
... forward ... ..						Interpolation for bridge less than 2L (if required) ✓
Tonnage opening aft ... ..						Deduction = <i>42.00 + 21.06 = - 8.84</i>
... forward ... ..						
Total ... ..	<i>146.52</i>	<i>146.52</i>			<i>146.52</i>	

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P. ... ..	<i>58.75</i>	<i>1</i>		<i>58.75</i>	<i>965</i>	<i>37.99</i>	<i>1</i>		<i>37.99</i>	Mean actual sheer aft = <i>Defective</i>
L from A.P. ... ..	<i>26.14</i>	<i>4</i>		<i>104.56</i>	<i>111</i>	<i>4.37</i>	<i>4</i>		<i>17.48</i>	Mean actual sheer forward = <i>Defective</i>
L " ... ..	<i>6.46</i>	<i>2</i>		<i>12.92</i>	<i>0</i>	-	<i>2</i>		-	Mean standard sheer forward
Amidships ... ..		<i>4</i>			<i>0</i>	-	<i>4</i>		-	Length of enclosed superstructure forward of amidships =
L from F.P. ... ..	<i>12.92</i>	<i>2</i>		<i>25.84</i>	<i>0</i>	-	<i>2</i>		-	" " aft of " = <i> tanker</i>
L " ... ..	<i>52.29</i>	<i>4</i>		<i>209.16</i>	<i>473</i>	<i>18.62</i>	<i>4</i>		<i>74.48</i>	
F.P. ... ..	<i>117.50</i>	<i>1</i>		<i>117.50</i>	<i>1930</i>	<i>75.98</i>	<i>1</i>		<i>75.98</i>	
Total ... ..				<i>528.73</i>					<i>205.93</i>	

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( \frac{75-S}{2L} \right) = \frac{322.8}{18} \left( \frac{.75 - .1503}{2} \right) = + 10.75$

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.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)	<i>84.50</i>
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{815+68}{136} = \frac{1.495}{1.36}$	<i>92.88</i>
Depth to Freeboard Deck = <i>38.22</i>	$\Delta = 20887$	Depth Correction ... .. <i>17.16</i>	
Summer freeboard = <i>9.32</i>	Tons per inch immersion at summer load water line	Deduction for superstructures ... .. <i>8.84</i>	
Moulded draught (d) = <i>28.90</i>	$WT = 65.47$	Sheer correction ... .. <i>10.75</i>	
Deduction for Tropical freeboard and addition for	Deduction = $\frac{\Delta}{40T}$ inches	Round of Beam correction ... .. <i>.07</i>	
Winter freeboard = $\frac{d}{4}$ inches = <i>7.22</i>	$\frac{\Delta}{40T} = 7.97$	Correction for Thickness of Deck amidships	
Addition for Winter North Atlantic Freeboard (if required) = <i>4.87</i>	% of mould depth <i>75.2 85.2 95.2</i>	Other corrections, scantlings, etc. ... ..	
	<i>20670 23690 26740</i>		
	<i>65.4 66.4 67.2</i>		
		Summer Freeboard = <i>111.88</i>	

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

Tropical Fresh Water Line above Centre of Disc	<i>15.19</i>	<i>.386</i>	Tropical Fresh Water Freeboard ...	<i>2.842</i>
Fresh Water Line	<i>7.97</i>	<i>.202</i>	"	<i>2.456</i>
Tropical Line	<i>7.22</i>	<i>.183</i>	"	<i>2.640</i>
Winter Line	<i>7.22</i>	<i>.183</i>	"	<i>2.659</i>
Winter North Atlantic Line	<i>12.09</i>	<i>.307</i>	"	<i>3.025</i>
			"	<i>3.149</i>

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Pan Gothica

Particulars of fiddley, funnel and ventilator coamings:— Fiddley funnel and ventilators on top of boatdeck.  
Fiddley with hinged steel radars, funnel and ventilators strongly constructed and supported, engine room skylight of steel.

None

alone

Particulars of Ventilators in exposed positions on freeboard and superstructure decks :-

Deck	No.	Size	Remarks	Area
Freeboard deck	1	2' x 3'	coaming to dry cargo hold	
	2	2' x 3'	peritric ports to pump room	
Roof deck	3	2' x 16'	to area space coaming	36' x .38
	2	2' x 12'		36' x .34
	2	2' x 8'		36' x .30
File deck	4	2' x 12'	coaming	36' x .34
	2	2' x 10'		36' x .34

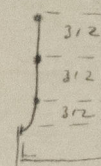
All ventilators fitted  
with steel cover and  
canvas cover

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks :-  
Coop deck 2 @ 4" diam to wing tanks 4 @ 3" diam to bil bottom tanks 2 @ 2" ditto 2 @ 3" and 2 @ 2" to after peak  
Freeboard deck 4 @ 6" diam to cofferdams  
Towcatcher deck 2 @ 4" and 2 @ 3" diam to fore peak  
 All air pipes 600 mm high goose neck

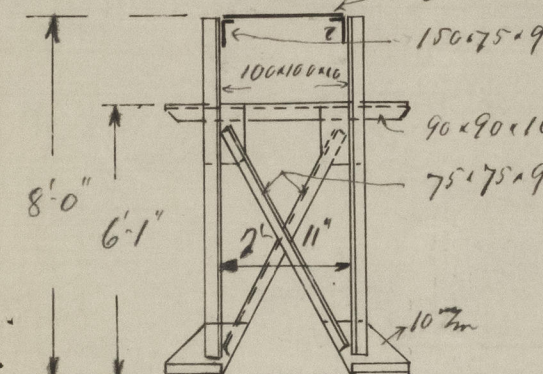
Particulars of Scuppers and Sanitary Discharge Pipes — No scuppers below freeboard deck.  
Sanitary discharge pipes from poop and bridge house led aboveboard.  
7400 and 8500 mm. above base line and fitted with non return  
valves at ship sides and efficient trap at inner end.

Scuttles:  
No side scuttles below freeboard deck  
Side scuttles in poop and forecabin fitted with  
hinged deadlights

Guard rails on poop-deck and fore-castle deck  
3'-6" high with 3 rods.



6<sup>avg</sup> in sheered plate      Gangway extends between poop and forecable



Two longitudinal cross bracing  
consisting of  $75 \times 75 \times 9$  angles  
on gangway between prop & pump room entrance

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	<i>Open rails fore and aft.</i>					
Forward Well						

State position of each freeing port ... { After Well :—  
(F. and A. position and height above deck edge) { Forward Well :—

State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such :—

Additional area where sheer is less than standard.

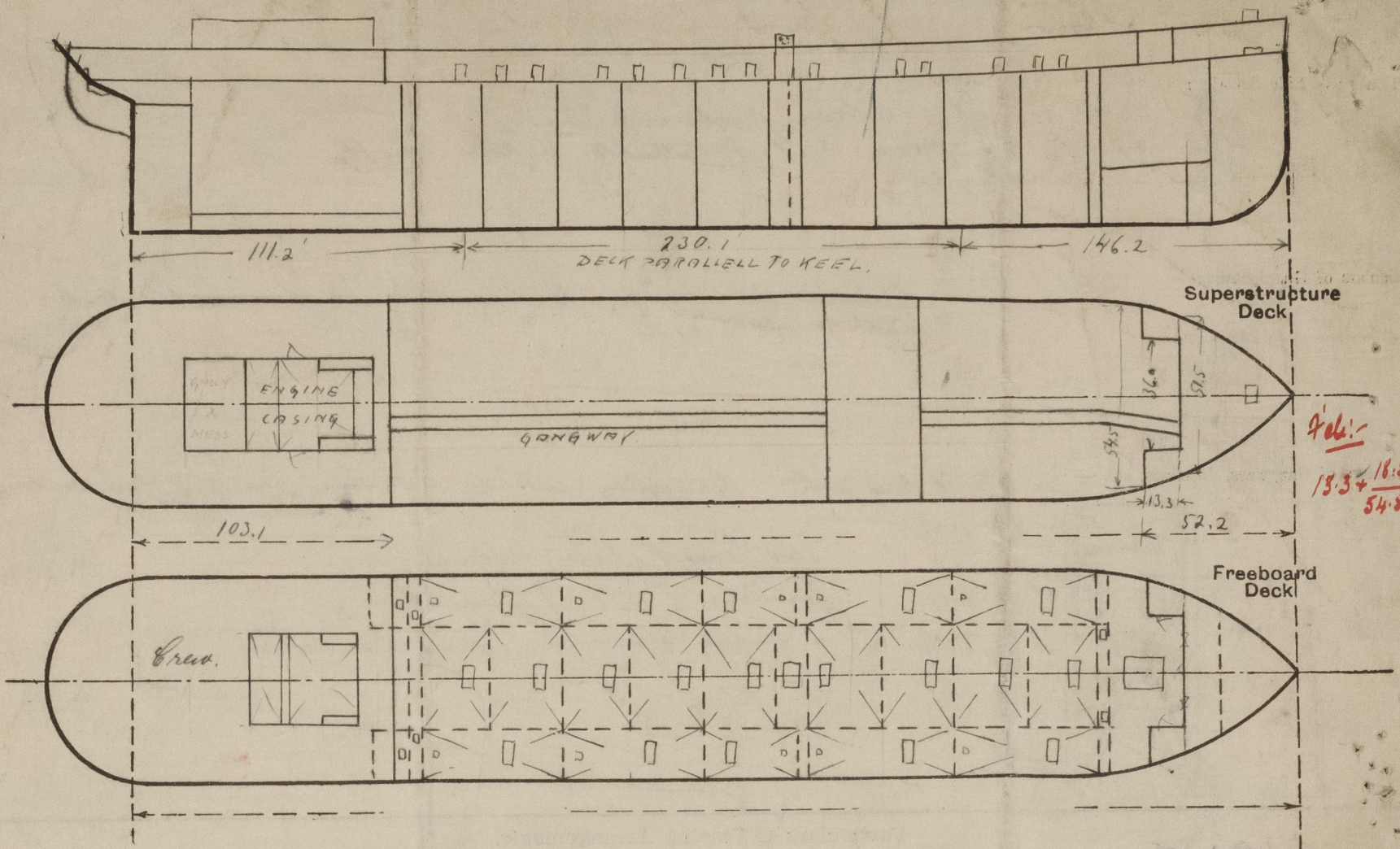
Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead ... ..	None	10	250 x 90 x 11 L	770	Lugs top & bottom	None	0	2440
Raised Quarter Deck Bulkhead ...								
Bridge, After Bulkhead ... ..								
Bridge, Forward Bulkhead ... ..								
Forecastle Bulkhead ... ..	None	7.5	75 x 90 x 9 L 90 mm flange	665-780	None	1650 x 720 1500 x 950	460 550	2440
Trunk, Aft ... ..								
Trunk, Forward ... ..								
Exposed Machinery Casings on Free-board or Raised Quarter Decks ...								
Exposed Machinery Casings on Super-structure Decks ... ..	None	8.5	75 x 120 x 8	825	Bracket top Round bottom	1570 x 710	445	2380
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... ..								
Deckhouses on Flush Deck Ships ...	None	9	75 x 130 x 9 L	825	None	1650 x 610	460	2440

Particulars of Closing Appliances (state if capable of being manipulated from both sides).

Poop Bulkhead	...	...	No opening
Raised Quarter Deck Bulkhead	...		
Bridge, After Bulkhead	...	...	
Bridge, Forward Bulkhead	...	...	
Forecastle Bulkhead	...	...	3 M.T. shed doors operated from both sides and two opening closed by portable plates secured by hook bolts not passing through the shed, spaced 340 mm
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	...	...	Hinged shed doors operated from both sides
Exposed Machinery Casings on Superstructure Decks	...	...	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	...	...	
Stowage lockers on Flush Deck Ships	...	...	Hinged shed door operated from both sides



Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the ship are to be shewn on the following sketches:—



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

Deck parallel to keel see sketch.

Builder's name and yard number *Götaverken yard no. 459*

Names of sister ships

Owners *Rederiaktiebolaget*

Fee *kr 450*

Received by me



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