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Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, Sailing Ship, Tanker
having Pop., bridge and forecastle.

(Type of Superstructures.)

Port of Survey Copenhagen (Nahshov)

Date of Survey 27th Nov. 1939.

Name of Surveyor H. J. Andersen

Particulars of Classification * 100 A 1
(Class. contemplated).

Ship's Name "SATURNUS"
(Nahshov Yard No 91).

Nationality and Port of Official Number Swedish 8400

Gross Tonnage 9872⁵⁰

Date of Build 1938

Moulded Dimensions: Length 486.11' Breadth 65.75' Depth 36.25'

Moulded displacement at moulded draught = 85 per cent. of moulded depth 44360 22000 tons

Coefficient of fineness for use with Tables .782

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth <u>36.25'</u>	(a) Where D is greater than Table depth (D - Table depth) R = <u>36.31 - 32.41 = + 11.70"</u>	Moulded Breadth (B) <u>65.75'</u>
Stringer plate (1/4") <u>.06</u>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <u>3.90</u>	Standard Round of Beam = $\frac{B \times 12}{50} = \underline{15.78}$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures <u>✓</u>	Ship's Round of Beam = <u>15.75"</u>
Depth for Freeboard (D) = <u>36.31</u>		Difference <u>Deficient = .03</u>
		Restricted to <u>✓</u>
		Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.03}{4} \times .5697 = \underline{.016}$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Pop. enclosed <u>Equin.</u> ...	<u>105.00</u>	<u>106.00</u>	<u>7.58'</u>		<u>106.00</u>
.. overhang					
R.Q.D. enclosed					
.. overhang					
Bridge enclosed <u>Equin.</u> ...	<u>44.88</u>	<u>44.88</u>	<u>7.5'</u>		<u>44.88</u>
.. overhang aft					
.. overhang forward					
Fore enclosed	<u>59.28</u>	<u>59.28</u>	<u>7.5'</u>		<u>59.28</u>
.. overhang					
Trunk aft					
.. forward					
Tonnage opening aft					
.. forward					
Total	<u>209.16</u>	<u>209.16</u>			<u>209.16</u>

Standard Height of Superstructure	<u>7.50"</u>
" " R.Q.D.	<u>✓</u>
Deduction for complete superstructure	<u>42.00"</u>
Percentage covered $\frac{S}{L} =$	<u>43.03</u>
" " $\frac{S_1}{L} =$	<u>43.03</u>
" " $\frac{E}{L} =$	<u>43.03</u>
Percentage from Table, Line A. <u>TANKER</u>	<u>34.03</u>
(corrected for absence of forecastle (if required))	
Percentage from Table, Line B.	<u>✓</u>
(corrected for absence of forecastle (if required))	
Interpolation for bridge less than 2L (if required)	
Deduction =	<u>42.00 x .3403 = 14.29"</u>

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	<u>58.61</u>	1		<u>58.61</u>	<u>58.75"</u>	<u>58.61</u>	1		<u>58.61</u>
1/4 L from A.P.	<u>26.08</u>	4		<u>104.32</u>	<u>41" 26.0</u>	<u>26.08</u>	4		<u>104.32</u>
1/2 L "	<u>6.45</u>	2		<u>12.90</u>	<u>26" 6.5</u>	<u>6.45</u>	2		<u>12.90</u>
Amidships		4			<u>0</u>		4		
3/4 L from F.P.	<u>12.90</u>	2		<u>25.80</u>	<u>52" 13.0</u>	<u>13.00</u>	2		<u>26.00</u>
1/4 L "	<u>52.16</u>	4		<u>208.64</u>	<u>82" 52.0</u>	<u>52.00</u>	4		<u>208.00</u>
F.P.	<u>107.22</u>	1		<u>107.22</u>	<u>107 1/2</u>	<u>107.50</u>	1		<u>107.50</u>
Total				<u>527.49</u>					<u>517.33</u>

Correction = $\frac{\text{Difference between sums of products}}{18} = \frac{10.16}{18} = \frac{10.16}{18} \times \left(\frac{75 - 21}{18} \right) = \frac{10.16}{18} \times \left(\frac{54}{18} \right) = \underline{+ .30"} \checkmark$

If limited on account of midship superstructure.

If limited to maximum allowance of 1 1/2 ins. per 100 ft.

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

Depth to Freeboard Deck = 36.31

Summer freeboard = 7.35

Moulded draught (d) = 28.96

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{4}$ inches = $\frac{28.96}{4} = \underline{7.24}$

Addition for Winter North Atlantic Freeboard (if required) = 4.86

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta = \underline{20680}$

Tons per inch immersion at summer load water line

$T = \underline{64.95}$

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

= $\frac{20680}{40 \times 64.95} = \underline{7.96}$

= 202

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{782 + 68}{1.26} = \frac{1.462}{1.36}$

	+	-
Depth Correction	<u>11.70</u>	
Deduction for superstructures		<u>14.29</u>
Sheer correction	<u>.30</u>	
Round of Beam correction		
Correction for Thickness of Deck amidships		
Other corrections, scantlings, etc.		
	<u>12.00</u>	<u>14.29</u>

Summer Freeboard = 88.19

SUMMER FREEBOARD amidships from Centre of

Disc to top of Deck Line, Wood, Steel, Deck :-

Tropical Fresh Water Line above Centre of Disc ... 386 ...

Fresh Water Line " " ... 202 ...

Tropical Line " " ... 184 ...

Winter Line below " " ... 184 ...

Winter North Atlantic Line " " ... 307 ...

Tropical Fresh Water Freeboard ... 1854 "

Fresh Water " " ... 2038 "

Tropical " " ... 2056 "

Winter " " ... 2424 "

Winter North Atlantic " " ... 2547 "

Particulars of Scuppers and Sanitary Discharge Pipes:—

No scuppers below upper deck.

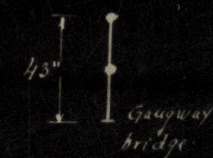
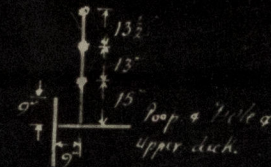
Scuppers & sanitary discharges through ship's sides within poop & bridge all provided with shutters of metal other than cast iron.

Particulars of Side Scuttles:—

No side scuttles below upper deck.

Side scuttles are provided with permanently attached, officially constructed, hinged dead weights.

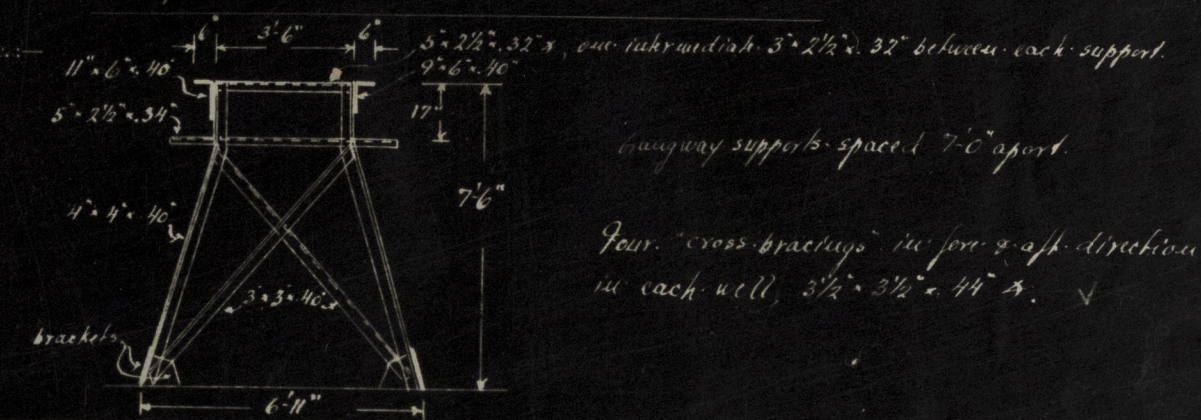
Particulars of Guard Rails:—



All stanchions spaced 4'6" apart.

Particulars of Gangways, Lifelines, etc.:—

Gangway fitted in forward & after wells.



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 ...						
Forward Well ...						

State position of each freeing port.

(F. and A. position and height above deck edge)

After Well:—

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 in way of casing...	50"	50"	11" x 3 1/2" x 18"	25 1/2"	bracketed top & bottom	None	✓	7'6"
Raised Quarter Deck Bulkhead casing	44"	44"	10" x 3 1/2" x 48"	27"	lapped both ends	None	✓	7'6"
Bridge, After Bulkhead ...	30"	30"	4" x 3" x 38"	30"	bracketed at top, lapped at both ends	7'6" x 37 1/2"	None	7'6"
Bridge, Forward Bulkhead ...	40"	40"	10" x 3 1/2" x 48"	30"	bracketed at top, lapped at both ends	4'11 1/2" x 36"	18"	7'6"
Forecastle Bulkhead ...	30"	30"	4" x 3" x 40"	27"	bracketed at top, lapped at both ends	7'6" x 37"	None	7'6"
Trunk, Aft ...	✓							
Trunk, Forward ...	✓							
Exposed Machinery Casings on Free-board or Raised Quarter Decks ...	✓							
Exposed Machinery Casings on Superstructure Decks (Poop Deck) ...	34"	34"	4" x 2 1/2" x 32"	28"	takes boundary bars	5'6" x 27"	15"	8'0"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	✓							
Deckhouses on Flush Deck Ships ...	✓							

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

Poop Bulkhead in way of casing...	No openings.
Raised Quarter Deck Bulkhead casing	No openings.
Bridge, After Bulkhead ...	Wood boards in riveted channels for full height of opening.
Bridge, Forward Bulkhead ...	Shutter, hinged to close watertight. Manip. from both sides.
Forecastle Bulkhead ...	Wood boards in riveted channels for full height of opening.
Exposed Machinery Casings on Free-board or Raised Quarter Decks ...	✓
Exposed Machinery Casings on Superstructure Decks ...	Shutter, hinged to close watertight. Manip. from both sides.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	✓
Deckhouses on Flush Deck Ships ...	✓

8, poop

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS									
Upper Deck									
Description of Hatchway	70-side and 60-side hatch	70-side hatch	70-side hatch	70-side hatch	70-side hatch	70-side hatch	70-side hatch	70-side hatch	70-side hatch
Dimensions of Hatchway	5' 3" x 7' 2"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"	1' 11" x 1' 11"
COAMINGS	Height above Deck	35"	8"	8"	8"	8"	8"	8"	8"
	Thickness Sides	50"	40"	40"	40"	40"	40"	40"	40"
	Thickness Ends	50"	40"	40"	40"	40"	40"	40"	40"
	Stiffeners	4" x 3" x 48, one each side couched to deck							
HATCH BEAMS	Brackets, Stays								
	Number								
	Spacing								
	Scantling and Sketch								
FORE AND AFTERS	Bearing Surface								
	Number								
	Spacing								
	Unsupported Lengths								
HATCH COVERS	Scantling* and Sketch								
	Bearing Surface								
	Material	Steel	Steel	Steel	Steel	Steel	Steel	Steel	Steel
	Thickness	50, stiff by 3 off 4" x 3" x 44 angles	40, stiffened	40, stiffened	40, stiffened	40, stiffened	40, stiffened	40, stiffened	40, stiffened
HATCH COVERS	How fitted	Hinged	Hinged	Hinged	Hinged	Hinged	Hinged	Hinged	Hinged
	Bearing Surface	oil tight	oil tight	oil tight	oil tight	oil tight	oil tight	oil tight	oil tight
	Spacing of Cleats	two at each side	two at each side	two at each side	two at each side	two at each side	two at each side	two at each side	two at each side
	Number of Tarpaulins	3, 12" x 14" apart	two at each side	two at each side	two at each side	two at each side	two at each side	two at each side	two at each side
*Are wood fore and afters steel shod at all bearing surfaces? <i>None fitted</i> Are battens and wedges efficient and in good condition? <i>yes</i> Are tarpaulins in good condition and in accordance with rule requirements? <i>yes</i> Are lashings provided in accordance with rule requirements? <i>yes</i>									

Particulars of fiddle, funnel and ventilator coamings:—

All openings in fiddle top provided with permanently attached hinged steel covers.
 Funnel and steel skylight to upper room of substantial construction.
 Vents on fiddle top & casing top: 1 off 12" diam, 30" x 32" coaming. } Efficient closing appliances
 6" 4" " 36" x 36" " } are supplied.
 4" 6" " 36" x 36" "

Particulars of Flush Bunker Scuttles:— *None fitted.*

Particulars of Companionways:— Access to crew's quarters within poop through steel house on poop having 2" hard wood doors capable of being manipulated from both sides, openings 5' 3" x 2' 0", sill 18".

Pump room house: height 8' 11", plating 32, stiff 4" x 2 1/2" x 30" spaced 24 1/2" apart & taking feet & top angles, steel door 5' 3" x 27" to close watertight with turnbuckles & being manipulated from both sides, sill 27".

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

Free.	Loop.	To pump room.
2 @ 17" diam, 36" x 40" coam.	3 off 9" diam, 30" x 36" coaming.	2 @ 21" diam, 9' 0" x 40" coaming well supported.
2 @ 12" " 36" x 36" "	2 " 6" " 30" x 26" "	
1 @ 9" " 36" x 34" "		
1 @ 6" " 36" x 26" "		

Efficient closing appliances are supplied.

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—

Opening of air pipes 36" above steel deck, except for two air pipes on poop deck of 18" height.

Efficient closing appliances fitted.

Particulars of Gangway Cargo and Coaling Ports:— *None fitted*



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