

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Computation of Freeboard for Steamer, ~~Sailing Ship~~, Tanker
having Forecastle, Bridge and poop.

Port of Survey Bergen.

Date of Survey 20th June 1932.

Name of Surveyor G. Webster D.Sc. & J. A. Eide Jr.

Particulars of Classification SS. 1100A1
S.S. Bgn. 110.3-1,31

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
"GRO"	NORWEGIAN BERGEN.		4211.	1917-10.

Moulded Dimensions: Length 351'-6" Breadth 50.62 ft. Depth 28'-6" 28.42
Moulded displacement at moulded draught = 85 per cent. of moulded depth 9880 tons
Coefficient of fineness for use with Tables 802.804.

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth <u>28.5 ft.</u>	(a) Where D is greater than Table depth (D - Table depth) R = <u>(28.46 - 23.43) 2.704</u>	Moulded Breadth (B) <u>50.62 ft.</u>
Stringer plate <u>46"</u>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <u>7.03 x 2.704 = + 13.60</u>	Standard Round of Beam = $\frac{B \times 12}{50} = 12.15$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures	Ship's Round of Beam = <u>12 1/2"</u>
Depth for Freeboard (D) = <u>28.46</u>		Difference <u>Even</u> <u>.35</u>
		Restricted to
		Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.35}{4} \times .57 = -.05$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed	<u>23'-0"</u>	<u>23.00</u>	<u>7'-0"</u>	<u>7.0/7.015</u>	<u>22.95</u>
" overhang	<u>5"</u>	<u>.12</u>			<u>.12</u>
R.Q.D. enclosed	<u>95.07</u>	<u>95.07</u>	<u>7'-0"</u>	<u>7.0/7.015</u>	<u>44.88</u>
" overhang	<u>8.0</u>	<u>.60</u>			<u>.60</u>
Bridge enclosed... <u>Equip</u> ...	<u>32.25</u>	<u>32.25</u>	<u>7'-0"</u>	<u>7.0/7.015</u>	<u>32.25</u>
" overhang aft	<u>6"</u>	<u>.12</u>			<u>.12</u>
" overhang forward	<u>6"</u>	<u>.12</u>			<u>.12</u>
Trunk aft					
" forward					
Tonnage opening aft					
" forward					
Total	<u>151.62</u>	<u>151.16</u>			<u>150.92</u>

Standard Height of Superstructure 7.015 ✓
" " R.Q.D. 38.76 ✓
Deduction for complete superstructure 38.76 ✓
Percentage covered $\frac{S}{L} = 43.14$
" " $\frac{S_1}{L} = 43.00$
" " $\frac{E}{L} = 42.94$ ✓
Percentage from Table, Line A.
(corrected for absence of forecastle (if required))
Percentage from Table, Line B. 30.00 ✓
(corrected for absence of forecastle (if required))
Interpolation for bridge less than 2L (if required)
Deduction = .30 x 38.76 = - 11.63 ✓

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	<u>45.15</u>	1		<u>45.15</u>	<u>54"</u>	<u>58.00</u>	1		<u>58.00</u>
1/4 L from A.P.	<u>20.09</u>	4		<u>80.36</u>	<u>22"</u>	<u>23.70</u>	4		<u>94.80</u>
1/2 L "	<u>4.95</u>	2		<u>9.94</u>	<u>7"</u>	<u>5.92</u>	2		<u>11.84</u>
Amidships		4			<u>0"</u>		4		
3/4 L from F.P.	<u>9.93</u>	2		<u>19.86</u>	<u>16"</u>	<u>12.25</u>	2		<u>24.50</u>
3/4 L "	<u>40.18</u>	4		<u>160.72</u>	<u>59"</u>	<u>48.98</u>	4		<u>195.92</u>
F.P.	<u>90.30</u>	1		<u>90.30</u>	<u>112"</u>	<u>114.0</u>	1		<u>114.00</u>
Total				<u>406.33</u>					<u>499.06</u>

Mean actual sheer aft = Even
Mean standard sheer aft = Even
Mean actual sheer forward = Even
Mean standard sheer forward = Even
Length of enclosed superstructure forward of amidships = $\frac{49'-1 1/2"}{351'-6"} = .14$ ✓
" " aft of " = $\frac{46'-6"}{351'-6"} = .13$ ✓
Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{406.33 - 499.06}{18} \left(.75 - \frac{.27}{2} \right) = -2.75$ ✓
If limited on account of midship superstructure. If limited to maximum allowance of 1 1/2 ins. per 100 ft.

Deduction for Tropical Freeboard.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{802.804 + .68}{1.36} = \frac{1.4824}{1.36}$
Depth to Freeboard Deck = <u>28.46</u> Ft.	Δ =	
Summer freeboard = <u>5.101</u>	Tons per inch immersion at summer load water line	
Moulded draught (d) = <u>23.365</u>	T = <u>not available</u>	
Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = <u>5.84</u>	Deduction = $\frac{\Delta}{40T}$ inches	
Addition for Winter North Atlantic Freeboard (if required) =		

Summer Freeboard = 61.21 2020

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

Tropical Fresh Water Line above Centre of Disc	Tropical Fresh Water Freeboard
Fresh Water Line " "	Fresh Water " "
Tropical Line " "	Tropical " "
Winter Line below " " <u>5.84"</u>	Winter " " <u>67.05</u>
Winter North Atlantic Line " "	Winter North Atlantic " "

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS													
Description of Hatchway	...	...	No. 1	No. 2	No. 3 ON BOPKDEK.	No. 4.	No. 5.	ON POOP.	Crossmember on maindeck.	Coll hatch or casing top to short.	On poop to store.	Made fast to T. rails
Dimensions of Hatchway	...	...	25'-5" x 18'-0"	27'-7" x 18'-0"	12'-2" x 18'-0"	25'-5" x 16'-0"	25'-5½" x 18'-0"	8'1" x 7'11½"	12'-9½" x 18'-2"	4'-3" x 13'-0"	2'-5" x 2'-5"	40" x 4'-0"
COAMINGS	{	Height above Deck	...	42"	42"	31"	39"	36"	30"	15"	18½"	15½"	
		Thickness	Sides	...	.44"	.44"	.40"	.44"	.44"	.34"	.30"	.30"
			Ends40"	.40"	.36"	.40"	.40"	.36"	.34"	.30"	.30"
		Stiffeners	...	None	None	None	None	None	None	None	None	None	None
		Brackets, Stays	...	None	None	None	None	None	None	None	None	None	None
HATCH BEAMS	{	Number	...	4	4	2	4	4	2	2	None	None	
		Spacing	...	61"	66"	49"	61"	61"	4'-3"	None	None	None	
		Scantling and Sketch	...	4"x3"x.40"	4"x3"x.40"	4"x3"x.40"	As No. 1	As No. 1.	4"x3"x.40"	None	None	None	
			...	24½"x.34"	27"x.40"	22"x.34"	As No. 1	As No. 1.	18½"x.34"	None	None	None	
			...	4"x3"x.40"	4"x3"x.40"	4"x3"x.40"	As No. 1	As No. 1.	18½"x.34"	None	None	None	
Bearing Surface	...	3½"	3½"	3"	3½"	3½"	3½"	3½"	3½"	3½"	3½"		
FORE AND AFTERS	{	Number	...	None	None	None	None	None	1	4'-0"	None	None	
		Spacing	...	None	None	None	None	None	4'-7"	None	None	None	
		Unsupported Lengths	...	None	None	None	None	None	wood	None	None	None	
		Scantling* and Sketch	...	None	None	None	None	None	6" x 6"	None	None	None	
		Bearing Surface	...	None	None	None	None	None	3"	None	None	None	
HATCH COVERS	{	Material	...	PINE.	PINE.	PINE.	PINE.	PINE.	PINE.	PINE.	PINE.	PINE.	
		Thickness	...	2¾"	2¾"	2¾"	2¾"	2¾"	2¾"	2¾"	2¾"	2½"	
		How fitted	...	F. & A.	F. & A.	F. & A.	F. & A.	F. & A.	F. & A.	F. & A.	F. & A.	F. & A.	
		Bearing Surface	...	3"	3"	3"	3"	3"	3"	3"	3"	2¼"	
Spacing of Cleats	...	...	17"-20"	19"-20"	20"	19"-20"	18"-20"	19"-21"	24"-28"	19"-24"	19"	18"
Number of Tarpaulins	...	...	3	3.	3.	3	3.	2.	2.	2.	2.	2.
*Are wood fore and afters steel shod at all bearing surfaces? None except on poop. This one not steel shod at ends.													
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? Yes.													

Particulars of fiddle, funnel and ventilator coverings:— Funnel and ventilator coverings on casingtop 6'-9" above bridgedeck in good condition. Fiddle openings covered by strong hinged steel covers. Hatch to old Donkey Boiler space on casingtop 3'-10" x 5'-11" x 3'-0" x 3'-0". Hinged steel cover for Half breadth. Remainder fixed.

Particulars of Flush Bunker Scuttles:—

None fitted.

Particulars of Companionways :—

None fitted

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:—		Total
2 ventilators on forecathledecks to accommodation	4½" x 30" x .25"	12" x 36" x .30"
1 " " " " " "	8" x 10" x .50"	2 Derrickposts on bridgedeck ventilators to bunkers.
2 " " " " " "	6" x 30" x .20"	1 ventilator on afterdeck to tunnel 6" x 50" x .26"
1 " " " " " "	12" x 30" x .30"	4 " " " on poop, to accommodation 8" x 3" x .45"
4 storepipes " " " " " " hold.	4" x 8½" x .25"	1 " " " to A. Peak store 5½" x 31" x .26"
1 greenhouseventilator to forepeak store	8½" above deck	2 storepipes " " " 5½" x 11" x .30"
2 ventilators on bridgedeck to holds	12" x 30" x .30"	

all ventilators fitted wood plugs and canvas covers.

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:— 4 airpipes on foredeck to D.B. tanks 36"–35" above deck.
1 airpipe port & starboard bridge deck to engine room tanks 23" above deck.
1 " " " " afterdeck to D.B. tanks 22" above deck and 2 at middle line 36" above deck.
1 " " on forecastle deck to forepeak 5" above deck.
Wood plugs for all airpipes.

Particulars of Gangway Cargo and Coaling Ports:—

None fitted.

<u>Particulars of Scupper and Sanitary Discharge Pipes</u>						<u>Sbb. One W.C. discharge just below maindeck from W.C. in Forecastle. N.R.V.</u>
<u>One W.C. discharge just above maindeck from W.C. in poop P.S. Fitted N.R.V.</u>						
" "	" "	" "	" "	" "	" "	" " in Bridge space P.S. "
" "	" "	" "	" "	" "	" "	" " in Bridgehouse S.B. "
" " Scupper	" "	" "	" "	" "	" "	washroom. S.B. bridgehouse.
" "	" "	" "	" "	" "	" "	pantry "
" "	" "	" "	" "	" "	" "	bathroom Port "
<u>Scupper from Bridge space port and S.B. just below maindeck with W.T. plate cover on inside.</u>						
<u>Particulars of Side Scuttles.</u>						

Particulars of Side Scuttles:

Deadlights on sidescuttles in poop and forecattle. No sidelights below freeboard deck.

Particulars of Guard Rails:— On fore-castle 3'-0" high. 3 rods. 5'-0" apart.
" poop 34" " 3 " 5'-0" " "

Bulwarks on bridgedecks abreast accommodation. Open rails elsewhere.

Particulars of Gangways, Lifelines, etc. :—

None fitted.

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	106'-3"	44"	45" x 13"	4	22.5 sq. ft.	21 sq. ft.
Forward Well	91'-4 1/2" as wing.	44"	42" x 16"	4	18.6 sq. ft.	18.3 sq. ft.
State position of each freeing port { After Well:—19'-6", 42'-3", 64'-9" & 81'-3" all of bridge after end bulkhead 14 1/2" above deck (F. and A. position and height above deck edge) { Forward Well:—14'-0", 31'-3", 48'-6" & 71'-6" forward of bridge front " " " State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— Shutters and 1 rod.						
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	18"x.40"	.30"	6"x3"x.50"	30"	No brackets	53"x 20 1/2"	20"	7'-0"	
Raised Quarter Deck Bulkhead ...									
Bridge, After Bulkhead	None	.32"	Flanged bulkhead pl. 3/4" flange.	51"	No brackets	60"x 37"	19"	7'-0"	
Bridge, Forward Bulkhead	18"x.40"	.36"	8"x3 1/2"x.70"	36"	Brackets top and bottom.	None	None.	7'-0"	
Forecastle Bulkhead	None.	.30"	3 1/2"x3"x.28" r and 6 steel bulkheads	3'-11"	No brackets.	52"x 26"	19"	7'-0"	
Trunk, Aft							Stalder's		
Trunk, Forward									
Exposed Machinery Casings on Raised Board or Raised Quarter Deck ...	18"x.40"	.28"	3"x3"x.32"	42"	No brackets	51"x 22"	18"	6'-9"	
Exposed Machinery Casings on Superstructure Decks covered by Rouse	18"x.40"	.28"	3 1/2"x3"x.30"	42"	Brackets as top.	51"x 23"	16"	6'-9"	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	18"x.40"	.30"	3 1/2"x3"x.30"	50"	No brackets	47 1/2"x 8'-0" 51"x 22" 36"x 36"	18" 18" 25"	7'-0"	
Deckhouses on Flush Deck Ships ...									

Particulars of Closing Appliances (state if capable of being manipulated from both sides).	
Poop Bulkhead	3 wood doors which can be manipulated from both sides.
BRIDGE AFTER	Door to forecabin room. Steel door 42" x 30" x 30" all. Hinged door. Strong steelclamps for closing tight.
Raised Quarter Deck Bulkhead	Two openings to engine room (steering gear space) 22" x 20" x 4" all. Hinged steelplate with 2 clips for closing.
Bridge, After Bulkhead	Strong opening Port St. B. fitted 2 3/4" shifting boards held in place by means of 5 x 5" wood inserts <i>ruled angles</i>
Bridge, Forward Bulkhead	extending full height of bridge space. Steel door to W.C. P.S. 51" x 22" x 13" all.
Forecastle Bulkhead	No openings.
Exposed Machinery Casings on Fore-	4 steel doors to W.C. pump and oil cooler. 2 wood doors to accommodation inside forecabin alleyway
board or Raised Quarter Decks ...	5 7/8" x 22" x 6" all. 4 steel doors in alleyway 4 3/4" x 22 1/2" x 15" all.
Exposed Machinery Casings on Super-	2 hinged steel doors P.S. and 1 on St. B. Ordinary clips for closing.
structure Decks	1 hinged steel door Port and St. B. to engine room. Canopy protected by deckhouse. Wood door at after
Machinery Casings within Superstruc-	end of passageway. Sill 17".
tures not fitted with Class I Closing	Opening port and St. B. in coalst. 36" x 36" x .25" all. Hinged steel door. 4 clips for closing.
Appliances	also sliding steel door P.S. to old Donkey boiler room and 1 steel door at <i>close to</i> engine room.
Deckhouses on Flush Deck Ships ...	

Hand-drawn plan view of a ship's hull, showing the Superstructure Deck and Freeboard Deck. The diagram includes various rooms and spaces, such as the After Hold, After Main Hold, Engineer Boiler Room, Fore Hold, House, Engine Room, Boiler, and various hatches and doors. Dimensions are given in feet and inches, and a calculation for the bridge length is shown at the bottom.

Superstructure Deck:

- After Hold.
- After Main Hold.
- ENGINEER BOILER ROOM.
- FORE HOLD.

Freeboard Deck:

- Accommodation.
- No. 5 HATCHWAY.
- No. 4 HATCHWAY.
- No. 2 HATCHWAY.
- No. 1 HATCHWAY.
- ICE BOX.
- STEER. GEAR.
- ENG. ROOM.
- OLD D.B.
- ISTONE.
- CROSS-BARRER.
- ACC.

Dimensions:

- 23'-0"
- 106'-3"
- 95'-7 1/4"
- 91'-4 1/2"
- 35'-3"

Calculation:

$$\begin{aligned} & \text{Bridge} \\ & = 95.62 - \frac{5.33 \times 2.54}{24.5} \\ & = 95.62 - 0.55 \\ & = 95.07 \end{aligned}$$

Final Calculation:

$$\begin{aligned} & \text{Total} \\ & 31.75 \\ & \quad 50.00 \\ & \hline & 81.75 = \text{under} \end{aligned}$$
[illegible]

No	Port and S.O.B.	4'-0" x 3'-0" x 31" coaming	x .32"	2 3/4"	-11-	-11-	2 1/4"	-11-	-11-	18"-2 4"	-11-
1											
2		6'-1 1/2" x 3'-0" x 31"	x .32"		-11-	-11-		-11-	-11-		

The survey confined to obtaining necessary measurements and carried out afloat. The owner desires to be assigned also a timber freeboard. There are no special fittings for lashings or uprights. Hand steering gear on poop and steering gear inside engine room casing. Steering rods alongside hatchways not specially noted.

$6\frac{1}{2}'' \times 3'' \times .34''$
 $7'' \times 150''$
 Spaced 68"-70"
 Not all on beams.
 Double lugs at deck

Double bottom tanks are not longitudinally subdivided watertight, but intercostals fitted.

The owner states he wishes to retain the L.R. freeboard if new International is unfavourable.

Summer	5' - 1 1/2"	from	steel	upper	Deck.
F.W.	4' - 7 1/2"	"	"	"	"
T.	4' - 8 1/2"	"	"	"	"
W.	5' - 6"	"	"	"	"
B. o. T. S.	5' - 1 1/2"	"	"	"	"

Summer 5' 3" below top of stat. deck line.
F.W. 6 3/4" above centre of disc.
T. 5" " " " "
W. 4 1/2" below " " " "
stat. Deck line 13 1/4" above deck at side.

Bergen 6th. July 1932
L. A. Bide jr.

Builder's name and yard number Joseph L. Thompson & Sons Ltd. No. 516.

Names of sister ships.

Owners a/s Gro. (O. Grolle Olsen & J. Hysing Olsen) Bergen.

Fee Kr. 261. : : : Received by me
+ expenses Kr. 0.50. = Kr. 261.50 not charged yet.