

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Index No. 279
(For London Office only.)

No 10007

Computation of Freeboard for Steamer, Sailing Ship, Tanker

ing

poop, bridge and fore.

Port of Survey Liverpool

(Type of Superstructures.)

Date of Survey 23/3/32 and
subsequently.

Ship's Name

Nationality and Port of Registry

Official Number

Gross Tonnage

Date of Build

"COCHRANE"

British
London

146705

7208

16-12-47
1923-3

Name of Surveyor A.W. Jackson

Moulded Dimensions: Length 439.6' Breadth 59.0' Depth 33.11'
Moulded displacement at moulded draught = 85 per cent. of moulded depth 16921. tons
Coefficient of fineness for use with Tables .492.

Particulars of Classification 100A1

Depth for Freeboard (D)

Depth correction

Round of Beam correction

Moulded depth 33.91'

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

Moulded Breadth (B) 59.0'

Stringer plate 60"04'

$(33.96 - 29.31) \times 3 = +13.95$

Standard Round of Beam = $\frac{B \times 12}{50} = \frac{708}{50} = 14.16$

Sheathing on exposed deck

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

Ship's Round of Beam = 12"

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

Difference 2.16

Depth for Freeboard (D) = 33.96'

If restricted by superstructures

Restricted to
Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{2.16^2}{4} \times .349 = +.20$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed	<u>37.13</u>	<u>37.13</u>	<u>8.0'</u>	✓	<u>37.13</u>
" overhang					
R.Q.D. enclosed					
" overhang	<u>186.09</u>	<u>186.09</u>	<u>8.75'</u>	✓	<u>186.09</u>
Bridge enclosed	<u>1.83</u>	<u>1.34</u>			<u>1.34</u>
" overhang aft					
" overhang forward					
Fore enclosed	<u>44.86</u>	<u>44.86</u>	<u>8.8'</u>	✓	<u>44.86</u>
" overhang	<u>1.01</u>	<u>.50</u>			<u>.50</u>
Trunk aft					
" forward					
Tonnage opening aft					
" forward					
Total	<u>243.92</u>	<u>242.95</u>			<u>242.95</u>

Standard Height of Superstructure 7.50'

" " R.Q.D. ✓

Deduction for complete superstructure 42.00

Percentage covered $\frac{S}{L} = 62.31$

" " $\frac{S_1}{L} = 62.09$

" " $\frac{E}{L} = 62.09$

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

Percentage from Table, Line B.
(corrected for absence of forecastle (if required)) 49.55

Interpolation for bridge less than 21 ft required

Deduction = $42.00 \times .4955 = -20.81$

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	<u>53.96</u>	1		<u>53.96</u>	<u>31.0</u>	<u>31.00</u>	1		<u>31.00</u>
$\frac{1}{4}$ L from A.P.	<u>24.01</u>	4		<u>96.04</u>	<u>11.25</u>	<u>11.25</u>	4		<u>45.00</u>
$\frac{2}{4}$ L "	<u>5.94</u>	2		<u>11.88</u>	<u>1.81</u>	<u>1.81</u>	2		<u>3.62</u>
Amidships	✓	4		-	-	-	4		✓
$\frac{2}{4}$ L from F.P.	<u>11.84</u>	2		<u>23.68</u>	<u>13.75</u>	<u>13.75</u>	2		<u>27.50</u>
$\frac{1}{4}$ L "	<u>48.03</u>	4		<u>192.12</u>	<u>40.44</u>	<u>40.44</u>	4		<u>161.76</u>
F.P.	<u>104.92</u>	1		<u>104.92</u>	<u>91.00</u>	<u>91.00</u>	1		<u>91.00</u>
Total				<u>485.66</u>					<u>359.88</u>

Mean actual sheer aft = Deficient
Mean standard sheer aft

Mean actual sheer forward = Deficient
Mean standard sheer forward

Length of enclosed superstructure forward of amidships = 194.

" " aft of " = 234

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{125.78}{18} \times (.75 - .3115) = +3.06$

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 = 33.96'

Summer freeboard = 7.24'

Moulded draught (d) = 26.69'

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta = 15659$

Tons per inch immersion at summer load water line

T = 52.2

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

.50

.42

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

Depth Correction 13.95

Deduction for superstructures 20.81

Sheer correction 3.06

Round of Beam correction20

Correction for Thickness of Deck amidships

Other corrections, scantlings, etc.

Summer Freeboard = 84.20

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

Tropical Fresh Water Line above Centre of Disc	<u>14.24</u>
Fresh Water Line " "	<u>4.24</u>
Tropical Line " "	<u>6.24</u>
Winter Line below " "	<u>6.24</u>
Winter North Atlantic Line " "	<u>✓</u>

Tropical Fresh Water Freeboard

Fresh Water " "

Tropical " "

Winter " "

Winter North Atlantic " "

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MARKING FORM
RECEIVED

16 MAR 1936

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS								
		<i>Up DK. in Well Fore.</i>		<i>Bridge DK.</i>		<i>Up DK. in Well Aft.</i>		<i>Cooling Pipes Br. DK.</i>
Description of Hatchway	...	N ^o . 1	N ^o . 2	N ^o . 3	N ^o . 4	N ^o . 5	N ^o . 6	
Dimensions of Hatchway	...	24'9"x16'	27'-8"x16'	13'-9"x16'	20'7"x16'	22'11"x16'	22'7"x16'	9'0"x16'
COAMINGS	Height above Deck ...	30"✓	30"✓	30"✓	30"✓	30"✓	30"✓	30"✓
	Thickness Sides Ends44 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓
	Stiffeners <i>Sides & ends</i> ...	7x3x40B.P. ✓						
	Brackets, Stays ...	Nil ✓						
HATCH BEAMS	Number ...	5	5	3	5	5	5	1
	Spacing ...	4'-2"	4'-7"	3'-8"	3'-6"	3'-10"	3'-10"	4'-6"
	Scantling and Sketch	I 12x6x6 x44lbs Channel ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓
	Bearing Surface ...	3"✓	3"✓	3"✓	3"✓	3"✓	3"✓	3"✓
FORE AND AFTERS	Number ...							
	Spacing ...							
	Unsupported Lengths Scantling* and Sketch		No n e					None
	Bearing Surface ...		Fitted. ✓					fitted. ✓
HATCH COVERS	Material ...	W.P. ✓						
	Thickness ...	3" ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓
	How fitted ...	F.A. ✓						
	Bearing Surface ...	3" ✓						
Spacing of Cleats	...	24" ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓	As N ^o . 1 ✓
Number of Tarpaulins	...	3						

*Are wood fore and afters steel shod at all bearing surfaces? ✓

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. ✓

No 3x4 + Rubber Hatchways in Bridge are fitted with covers, cleats 2 1/2" apart, batten arrangements and two tarpaulins.

Particulars of fiddle, funnel and ventilator coamings:—Stokehold gratings covered by strong steel hinged covers.
Fiddle ventilators in efficient condition.
Funnel carried well down into stokehold, no coaming.
Engine at right of steel, strongly constructed.

Particulars of Flush Bunker Scuttles:—

None fitted. ✓

Particulars of Companionways:— 1- Steel companion 7'-0" x 2'-9" x 7'-0" high on Poop Deck leading from steering house and tunnel escape when shifting boards fitted in poop front. 2- steel doors in opening 5'-8½" x 2'-2", sill 13½" above wood deck sheathing, doors capable of being manipulated from both sides. ✓

Particulars of Ventilators in exposed positions on freeboard and superstructure decks :— *All ventilators constructed in accordance with the R.U. and coamings closed with wood plugs and canvas covers.*

No.	Position	Dia.	Ht.	Thrs.	Service	No.	Position	Dia.	Ht.	Thrs.	Service	No.	Position	Dia.	Ht.	Thrs.	Service
1	File Head.	15"	36"	40"	F.P. Space.	2	Upper DK	20"	126"	40"	Nº 2 Hold.	2	Upper DK	20"	35"	40"	Nº 5 Hold
2	"	8 1/2"	26"	65"	Chain Locker.	2	Bridge DK	20"	126"	40"	Res. Bunker.	2	Pool DK.	20"	10"	40"	"
2	"	16"	36"	40"	Lower File Head.	4	"	14"	26"	34"	BUNKER.	1	"	20"	30"	40"	Tunnel Escape
2	"	26"	36"	40"	Nº 1 Hold.	2	"	20"	126"	40"	Nº 3 Hold.	1	"	9"	26"	42"	Lower Bunk Peak Space
2	Upper DK on Tapering	20"	120"	40"	"	2	Upper DK on Tapering	20"	126"	40"	Nº 4 Hold.						Ventilators marked & well stage a
2	Upper DK	20"	68"	40"	Nº 2 Hold	2	Upper DK on Tapering	20"	120"	40"	"						Adjacent structure. ✓

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

No.	Position	Dia.	Ht.	Service	No.	Position	Dia.	Ht.	Service
16.5	File Head	4"	28"	Fore Peak ✓	46.5	Br. DK. aft.	3"	15"	Nº 1 S & S D.B. Tks. ✓
16.5	" " P	4"	26"	Nº 1 D.B. Tank ✓	66.5	HPDK. Aft. Hk	4"	57"	Nº 3 S & S D.B. " ✓
20.5	HP DK in Well	4"	28"	Nº 1 D.B. Air Filling ✓	16.5	Pool DK.	4"	27 1/2"	Aft. Peak. ✓
20.5	" " "	3"	27"	Nº 2 D.B. Tank. ✓					
20.5	Br. DK. Fore	3"	35"	Nº 2 D.B. Air Filling ✓					
40.5	" " Amid.	4"	35"	Nº 4 D.B. Tank. ✓					

✓ Height measured from top of fire sheathing
 * Height measured from top of canvas waterway on file head.
 Canvas covers supplied to air

Particulars of Gangway Cargo and Coaling Ports:— Two heavy steel cargo ports (10' x 15') in Bridge Deck. aft 29' x 5' 9", watertight, and closed by three heavy channel supports fitted horizontally, two substantial screw bolts and nuts to each channel. ✓

Now reported closed

Particulars of Scuppers and Sanitary Discharge Pipes

Scupperns in welts forward and aft $7\frac{1}{2} \times 4\frac{1}{2}$ and $6 \times 5\frac{1}{2}$
Collinson Type. ✓
Sanitary discharge pipes fitted with gunmetal storm valves at
ships sides. ✓

Particulars of Side Scuttles: Side scuttles to crew spaces in upper and lower fistles and bridge tween dk. spaces provided with hinged deadlights. ✓
Side scuttles in poop spaces not provided with hinged or portable deadlights. ✓
All scuttles of substantial construction. ✓

Particulars of Guard Rails:—

Pool	Guard rails	4'-0" high,	three rails,	stanchions spaced	4'-4" apart.	✓
Bridge	"	3'-8"	"	"	4'-4" - 4'-6"	✓
Foale	"	3'-8"	"	"	4'-0"	✓

Particulars of Gangways, Lifelines, etc. :—

None fitted.

*Lepidus fitted in accordance with
the regulations.*

Particulars of Freeing Arrangements.

	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
er Well	79'-6" ✓	4'-2"	2'-9" x 1'-6"	4	16.5 ϕ ✓	13.9 16 ϕ ✓
Forward Well	86'-2" ✓	4'-2"	2'-11" x 1'-6½"	4	18.0 ϕ ✓	17.2 ϕ ✓

State position of each freeing port } After Well: 14'-5½" x 2'-9" — 18'-6" x 2'-9" — 21'-2" x 2'-9" — 18'-0" x 2'-9" x 2'-9" For. ✓
 (F. and A. position and height above deck edge) } Forward Well: 14'-7½" x 2'-11" — 18'-9" x 2'-11" — 22'-9" x 2'-11" — 20'-5" x 2'-11" x 2'-11" For. ✓

State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such: — All ports open with three vertical rods to each. Height above deck edge 12' 3/4" ✓

Additional area where sheer is less than standard.

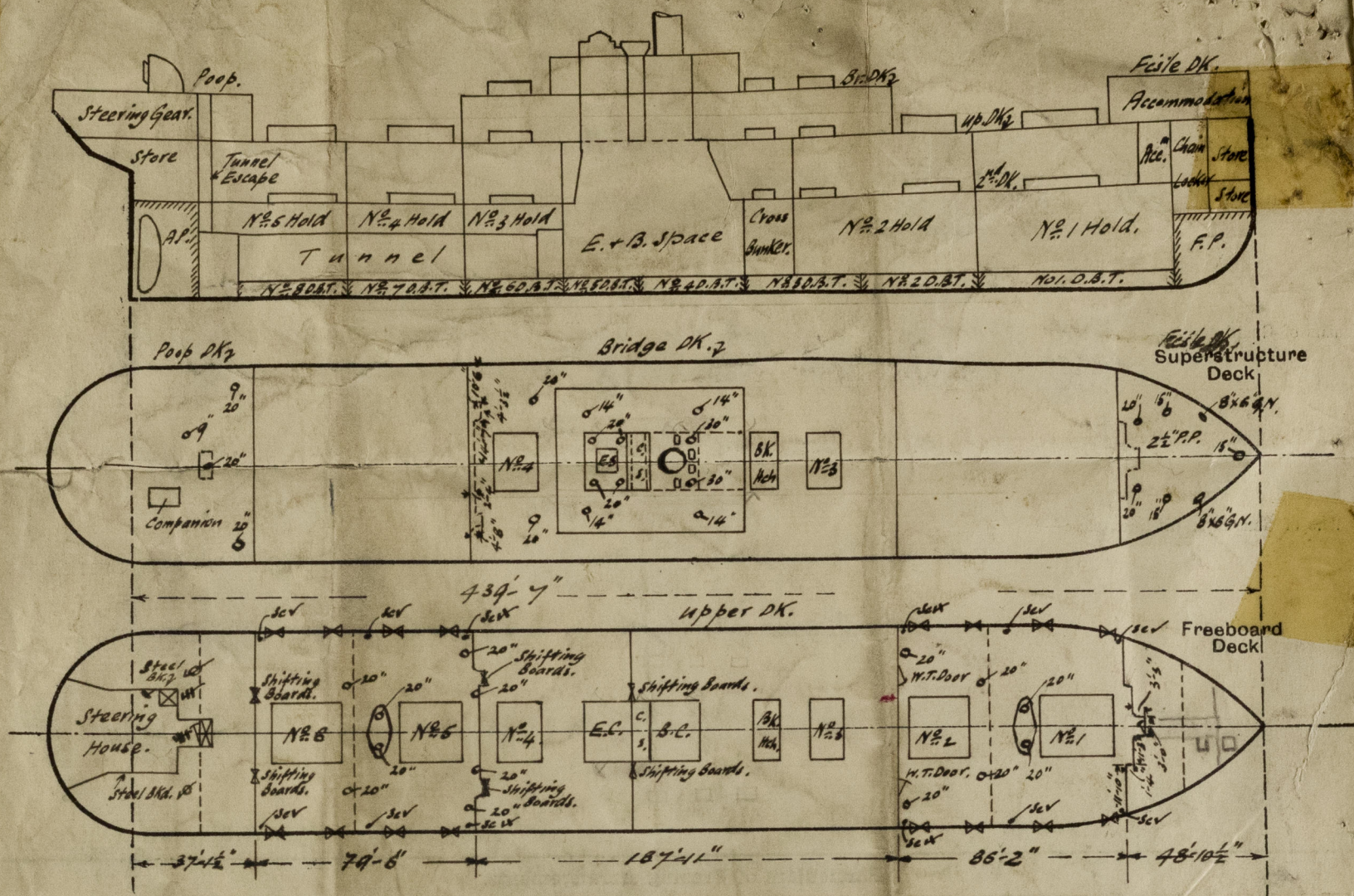
Particulars of Superstructures, Trunks, Casings, Deckhouses.

	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead	48" ✓	44" ✓	7x3x.40" OA and long. blk.	29" ✓	Nil ✓	2@3'-6"x5'-0" ✓	18" ✓	8'-0" ✓
Raised Quarter Deck Bulkhead ...	✓	✓	✓	✓	✓	✓	✓	✓
Bridge, After Bulkhead	36" ✓	36" ✓	flanged plate 4 1/2"	32" ✓	Nil ✓	2@3'-5"x5'-7" ✓	12" above wood dk. ✓	8'-6" ✓
Bridge, Forward Bulkhead	50" ✓	50" ✓	9x3x.668A. ✓	27 1/2" ✓	Skts. top + bottom. ✓	2@3'-0"x5'-0" ✓	18" ✓	8'-6" ✓
Forecastle Bulkhead	nil ✓	25" ✓	Flanged plate 3" and 12x2 1/2x30" ✓	28" ✓	Nil ✓	1@2'-0"x5'-5 1/2" ✓	12" above wood dk. ✓	8'-0" ✓
Trunk, Aft	✓	✓	✓	✓	✓	✓	✓	✓
Trunk, Forward	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Free- board or Raised Quarter Decks ...	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Super- structure Decks	38" ✓	34" ✓	2 1/2"x2 1/2"x36" ✓	30" ✓	Skts. at top ✓	1 to 5 1/2" + 1 to 8 1/2". 2 1/2" x 5'-2" ✓	12" above dk. combustion ✓	✓
Machinery Casings within Superstruc- tures not fitted with Class I Closing Appliances	38" ✓	34" ✓	2 1/2" x 2 1/2" x 36" ✓	30" ✓	✓	5'-4" x 2'-3" ✓	19" ✓	✓
Deckhouses on Flush Deck Ships ...	✓	✓	✓	✓	✓	✓	✓	✓

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

poop Bulkhead	✓	3" shifting boards full height in steel channels riveted to poop bulkhead.
Raised Quarter Deck Bulkhead	✓	
Bridge, After Bulkhead		3" shifting boards full height in steel channels riveted to bridge after bhd.
Bridge, Forward Bulkhead		Hinged steel W.T. doors capable of being manipulated from both sides.
Forecastle Bulkhead		Heavy teak door capable of being manipulated from both sides.
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	✓	
Exposed Machinery Casings on Superstructure Decks		Steel doors capable of being manipulated from both sides.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	✓	Two steel doors capable of being manipulated from both sides
Access on Flush Deck Ships	✓	

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



- ✓ 6"x3½" Scuppers
- ✓ 7½"x4½" Scuppers
- ✓ Hatch to Store on After Peak Flat 2'9"x2'6", 5" angle coaming, 2½" H.P. cover.
- ✓ Steel door to Tunnel Escape 2'0"x5'8", 9" sill, capable of being manipulated from both sides.
- ✓ Steering house 25" ply flanged plate stiffeners 3" and 5½"x3x32 L in way of door P side, spaced 2'0"-3'0" apart, no end attachments. Door steel 2'5"x5'8", sill 9", capable of being worked from both sides.
- ✓ Sheers measured afloat.

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

Bridge 187.92
Deduct $\frac{14.58 \times 2.33}{29.5} = 1.15$ 186.09
 $\frac{4.29 \times 4.64}{29.5} = .68$ 186.77
 $\frac{1.83}{1.83} = 1.00$ 187.77

Forecastle 48.84
Deduct $\frac{11.25 \times 1.33}{24.58} = .61$ 48.23
 $\frac{3.25 \times 3}{24.58} = .40$ 47.83
 $\frac{1.01}{1.01} = 1.00$ 48.84

85% M.D. = 28'-10" ✓
 1½"

Δt @ 26'-0" = 15152 ✓
 35½" @ 52.2 = 1854 ✓
 14006 ✓
 mld Δt = 16921 ✓
 B.C. = 792

Maximum Draft	Disp. Tons	
27'	15,870	718
26'	15,152	626
25'	14,526	623
24'	13,903	

Fresh Water

26'-8¼"
 1½"
 26'-9¾" 15152
 504
 15659

Builder's name and yard number John Brown & Co Ltd. No. 597

Names of sister ships "CALGARY", "CALUMET", "CARIBOO"

Owners ELDER, DEMPSTER & Co Ltd.

Fee £ 15 : 6 : 0

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