

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

18172.

Computation of Freeboard for Steamer, Sailing Ship, Tanker

 having Complete Superstructure + 4' side on S&L Deck  
with tonnage opening aft  
 (Type of Superstructures.)
Port of Survey LeithDate of Survey 8<sup>th</sup> - 13<sup>th</sup> April 1932.Name of Surveyor John HoustonParticulars of Classification +100 A1  
with freeboard.

Ship's Name <u>4s "Bairnglen"</u>	Nationality and Port of Registry <u>British Newcastle</u>	Official Number <u>149417</u>	Gross Tonnage <u>5019</u>	Date of Build <u>1926</u> <u>9.</u>
Moulded Dimensions: Length <u>400.0'</u> Breadth <u>55.0'</u> Depth <u>28.75'</u> ✓				
Moulded displacement at moulded draught = 85 per cent. of moulded depth = <u>11460</u> tons				
Coefficient of fineness for use with Tables <u>.75 .446</u> ✓				

Depth for Freeboard (D)

Moulded depth ... 28.75'

Stringer plate ... 0.3'

Sheathing on exposed deck

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

Depth for Freeboard (D) = 28.78'

Depth correction

(a) Where D is greater than Table depth  
(D-Table depth) R =  
 $(28.78 - 28.67) \times 3 = +0.33'$

(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) 55.0'

Standard Round of Beam =  $\frac{B \times 12}{50} =$  13.20 ✓

Ship's Round of Beam = 13.50 ✓

Difference excess .30 ✓

Restricted to

Correction =  $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L}\right) = \frac{.30}{4} \times .0056 =$  nil ✓

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)
Poop enclosed ...	<u>41.12</u> ✓	<u>41.12</u> ✓			<u>41.12</u>
" overhang ...					
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...					
" overhang aft ...	<u>354.42</u> ✓	<u>354.38</u> ✓	<u>8.5'</u>	✓	<u>354.38</u>
" overhang forward ...					
Fore-castle enclosed ...	<u>46.0</u> ✓	<u>46.0</u> ✓	<u>7.0'</u>		
" overhang ...					
Trunk aft ...					
" forward ...					
Tonnage opening aft ...	<u>4.6</u> ✓	<u>2.25</u> ✓			<u>2.25</u>
" forward ...					
Total ...	<u>400 ft.</u>	<u>397.75</u> ✓			<u>397.75</u> ✓

Standard Height of Superstructure 4'6" ✓

" " R.Q.D. ✓

Deduction for complete superstructure 42.00 ✓

Percentage covered  $\frac{S}{L} =$  100 ✓

"  $\frac{S_1}{L} =$  99.44 ✓

"  $\frac{E}{L} =$  99.44 ✓

Percentage from Table, Line A.  
(corrected for absence of fore-castle (if required)) 99.31 ✓

Percentage from Table, Line B.  
(corrected for absence of fore-castle (if required)) ✓

Interpolation for bridge less than 2L (if required) ✓

Deduction =  $.9931 \times 42 =$  41.71 ✓

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<u>50</u>	1		<u>50</u>	<u>57</u>	<u>52.00</u>	1		<u>52.00</u> ✓
$\frac{1}{6}L$ from A.P. ...	<u>22.25</u>	4		<u>89.0</u>	<u>21.75</u>	<u>22.12</u>	4		<u>88.00</u> ✓
$\frac{2}{6}L$ " ...	<u>5.5</u>	2		<u>11.0</u>	<u>5.5</u>	<u>5.52</u>	2		<u>11.00</u> ✓
Amidships ...		4					4		
$\frac{2}{6}L$ from F.P. ...	<u>11.0</u>	2		<u>22.0</u>	<u>9.25</u>	<u>10.56</u>	2		<u>21.12</u> ✓
$\frac{1}{6}L$ " ...	<u>44.5</u>	4		<u>178.0</u>	<u>37.75</u>	<u>42.42</u>	4		<u>170.88</u> ✓
F.P. ...	<u>100.0</u>	1		<u>100.0</u>	<u>84</u>	<u>96.00</u>	1		<u>96.00</u> ✓
Total ...				<u>450.0</u>					<u>438.00</u> ✓

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = (+) \frac{12}{18} \times .25 = (+) .17$  ✓

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 = 28.78 ✓

Summer freeboard = 3.31 ✓

Moulded draught (d) = 25.47 ✓

## Deduction for Tropical freeboard and addition for

Winter freeboard =  $\frac{d}{4}$  inches = 6.37 ✓

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

## Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$  12095

Tons per inch immersion at summer load water line

$T =$  43.235

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

= 6.938

## TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

$\frac{.7464 \times 68}{1.36} \times$

Depth Correction ...

Deduction for superstructures ...

Sheer correction ...

Round of Beam correction ...

Correction for Thickness of Deck amidships ...

Other corrections, scantlings, etc. ...

41.50 ✓

74.98 ✓

+

-

6.33 ✓

41.41 ✓

.17 ✓

6.50 ✓

41.41 ✓

-35.21 ✓

Summer Freeboard = 39.77 ✓

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:— 3'-3 $\frac{3}{4}$ "

Tropical Fresh Water Line above Centre of Disc ... 13 $\frac{1}{4}$ " ✓

Fresh Water Line " " ... 7 $\frac{1}{4}$ " ✓

Tropical Line " " ... 6 $\frac{1}{4}$ " ✓

Winter Line below " " ... 6 $\frac{1}{4}$ " ✓

Winter North Atlantic Line " " ... ✓

Tropical Fresh Water Freeboard ... 2'-2 $\frac{1}{2}$ " ✓

Fresh Water " " ... 2'-8 $\frac{3}{4}$ " ✓

Tropical " " ... 2'-9 $\frac{1}{2}$ " ✓

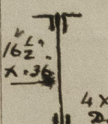
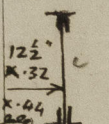
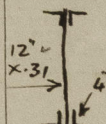
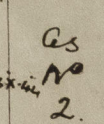
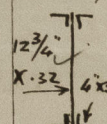
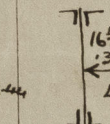
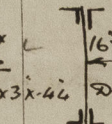
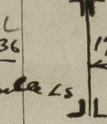
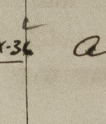
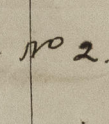
Winter " " ... 3'-10" ✓

Winter North Atlantic " " ... ✓

28 APR 1932



## PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS												
On Superstructure Deck.												
On Heelboard Deck.												
Description of Hatchway			Nº 1	Nº 2	Nº 3	Nº 4	Nº 5	Nº 1	Nº 2	Nº 3	Nº 4	Nº 5
Dimensions of Hatchway			26'0" X 18'0"	31'6" X 18'0"	26'3" X 18'0"	31'6" X 18'0"	27'0" X 18'0"	26'0" X 18'0"	31'6" X 18'0"	22'6" X 18'0"	31'6" X 18'0"	27'0" X 18'0"
COAMINGS	{	Height above Deck	3'0	3'0"	3'0"	3'0"	3'0"	1'6"	1'6"	1'6"	1'6"	1'6"
		Thickness	.44	.44	.44	.44	.44	.48	.44	.44	.44	.44
		Sides	.44	.44	.44	.44	.44	.48	.44	.44	.44	.44
		Ends	.44	.44	.44	.44	.44	.48	.44	.44	.44	.44
Stiffeners		7 x 3 x 40						✓				
Brackets, Stays		2 Palm Stays						✓				
HATCH BEAMS	{	Number	4	5	1 Web + 2 Divisions	5	4	4	5	1 Web + 2 Divisions	5	4
		Spacing	5'-2 1/2"	5'-3"	5'-0 3/4"	5'-3"	5'-4 3/4"	5'-2 1/2"	5'-3"	5'-7 1/2"	5'-3"	5'-4 3/4"
		Scantling and Sketch										
		Bearing Surface	3	3	3	3"	3	3	3	3	3	3
FORE AND AFTERS	{	Number										
		Spacing										
		Unsupported Lengths										
		Scantling* and Sketch										
Bearing Surface												
HATCH COVERS	{	Material	Wood					Wood				
		Thickness	3"					3"				
		How fitted	7. + A.					7. + A.				
		Bearing Surface	3"					3"				
Spacing of Cleats		24"					24"					
Number of Tarpaulins		3					2					

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

Are battens and wedges efficient and in good condition?

Are tarpaulins in good condition and in accordance with rule requirements?

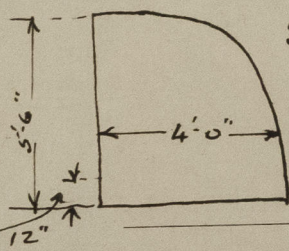
Are lashings provided in accordance with rule requirements?

Particulars of fiddle, funnel and ventilator coamings:— The stokehold gratings are covered by strong hinged covers. The fiddle & funnel ventilators are in efficient condition. The Engine Room skylight is of steel strongly constructed.

Particulars of Flush Bunker Scuttles:—

Nil

Particulars of Companionways :—



Fitted on top of deck house, leading to Eng. Room.  
Steel  $\frac{1}{2}$ " plating. Wood door 4'-6" x 2'-0" manipulated from  
both sides.

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

2 Goose necks 5'-16" high leading to fore peak.  
2 Vents. 9" dia. 18" boaming to fore castle.  
1 Goose neck 5" dia. 16" high leading to Carpenter's shop.  
1-4 1/2 Vents. 36" boaming at end of each hatchway to 'tween Deck.  
1-28" Vent } permanently fitted on top of mast house (fore)  
1-24" " }  
6 Vents 12" dia. 30" boaming amidships leading to No 3 hold & 'tween Deck.  
2 Samson Posts leading to No 3 hold.

2 Vents 9" dia. 30" Coaming to Bunkers.  
2 " 12" " 30" " led to Refrig. E.R.  
1-28 Vent-) permanently fitted on top  
1-24 " } of mast house (main).  
2-18 Vents 30" Coaming led to aft hold  
2-10 " 30" " led to lower gun  
1-6 " " secured to parrels  
etc 1-6 " 8'-6" " led to

all Vent. coverings are efficient, & with the exception of those permanently fitted on most houses, they can be closed with wood plugs aft. & canvas covers.

(which are filled with non-return values).

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

Particulars of Air Pipes in exposed position

1-2 Goose necks 3" dia 16" high on fire leading to fore peak tank.

1-3" dia 29" high led to No 1 tank Centre.

2-4" " 26" " " 1 " f.s.

2-4" " 27" " " 2 tank fore of bridge

2-4" " 27" " " 2 " aft " "

2-4" " 27" " " 3 " amidships.

2-3" " 24" " " " 5P } led to E.R. & sloshing tanks.

8-4" " 27" " " " 3S } led to fresh water tanks.

2-3" " 24" " " " "

2-4" dia. 27" high } on after deck, led to  
3-2½ " 27 " } after tanks.

All air pipes can be closed with wood  
plugs and/or canvas covers. ✓

Particulars of Gangway Cargo and Coaling Ports:—

We



Particulars of Scuppers and Sanitary Discharge Pipes —

The Scuppers, 8 off each side, are led overboard under the Superstructure deck by means of steel pipes pointed to the deck & shell plating. The Scuppers, 10 off each side, on the freeboard deck, are led overboard under that deck by means of steel pipes. They are fitted with storm valves on the shell plating & have series down plates on deck.  
Nine soil pipes, port side, & six ditto starboard side are led overboard through the shell plating in the shelter deck space, & are fitted with storm valves. ✓

Particulars of Side Scuttles:

3 - 10' in fore & aft side.

4 - amidships port side only.

10 - aft in crew's quarters each side.

} all 10' dia! & fitted with dead lights.

Particulars of Guard Rails:—

Forecastle - open Rails 3'-10" high. 4 rails 10" apart. Stanchions 4'-9" apart.

Shelter DK - Solid bulwarks 3'-6" high. with 6" x 3" B.A. stanchions 5'-6" apart.

Particulars of Gangways, Lifelines, etc.:—

No lifelines are fitted at present, but the Master of the vessel stated that these are set up fore & aft, when the occasion demands them. ✓

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 ...	From poop houses to aft end of midship house = 110 ft	3'-6"	4'-6" x 9" } 4'-10" x 15" }	4 off. } 1 off. }	10 3/4 sq ft	22 1/2 sq ft
Forward Well ...	From aft end of midship house to front of saloon = 126 ft From front of saloon to fore = 92 ft	3'-6"	4'-6" x 9" } 4'-10" x 15" }	2 off amidships } 4 off. } 1 off. }	44 sq ft 13 1/4 sq ft	11 1/4 sq ft 12 1/4 sq ft 9.2 sq ft
State position of each freeing port ... (F. and A. position and height above deck edge) } After Well: 7 ft, 33 ft, 47 ft, 64 ft & 80 ft from midship house } the 9" ports are 9" from dk. } Forward Well: 7 ft, 27 ft, 43 ft, 54 ft & 77 ft " saloon front. " 15 " " 12 " "						
State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— No bars. The 15" wide ports are in way of fairleads & are protected by these.						
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
Tonnage opening								
Poop Bulkhead ...	6/20	38	6 x 3 x 40	30	Bracketed top & bottom	✓	✓	✓
Raised Quarter Deck Bulkhead ...	6/20	6/20	3 1/2 x 3 x 30	34	✓	4' x 3'	18"	✓
Bridge, After Bulkhead ...								
Bridge, Forward Bulkhead ...						2-21" x 14" air vents, 5 ft from dk 2-4'0" x 3'0" 2-4'10" x 1'10"	18" 19"	7'-0"
Forecastle Bulkhead ...	34	30	3 x 3 x 30	36	✓			
Trunk, Aft ...								
Trunk, Forward ...								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...								
Exposed Machinery Casings on Superstructure Decks ...	38	34	4 x 3 1/2 x 40	36	✓	4'2" x 1'10"	21"	8'-0"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	50	34	4 x 3 1/2 x 40	54		4'2" x 1'10"	18"	8'-6"
Deckhouses on Flush Deck Ships ...								

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

Tonnage well	No openings
Poop Bulkhead ...	
Raised Quarter Deck Bulkhead ...	Portable plates fastened by hook bolts spaced 10" apart.
Bridge, After Bulkhead ...	
Bridge, Forward Bulkhead ...	
Forecastle Bulkhead ...	
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	Clamped steel flaps over air vents. Storm boards 3" thick in channels for full height in 4'0" x 3'0" openings. Wood doors manipulated from both sides in hospital & store room. 4'10" x 1'10".
Exposed Machinery Casings on Superstructure Decks ...	Hinged steel doors 4'2" x 1'10" manipulated from both sides.
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	Hinged steel doors manipulated from both sides
Deckhouses on Flush Deck Ships ...	

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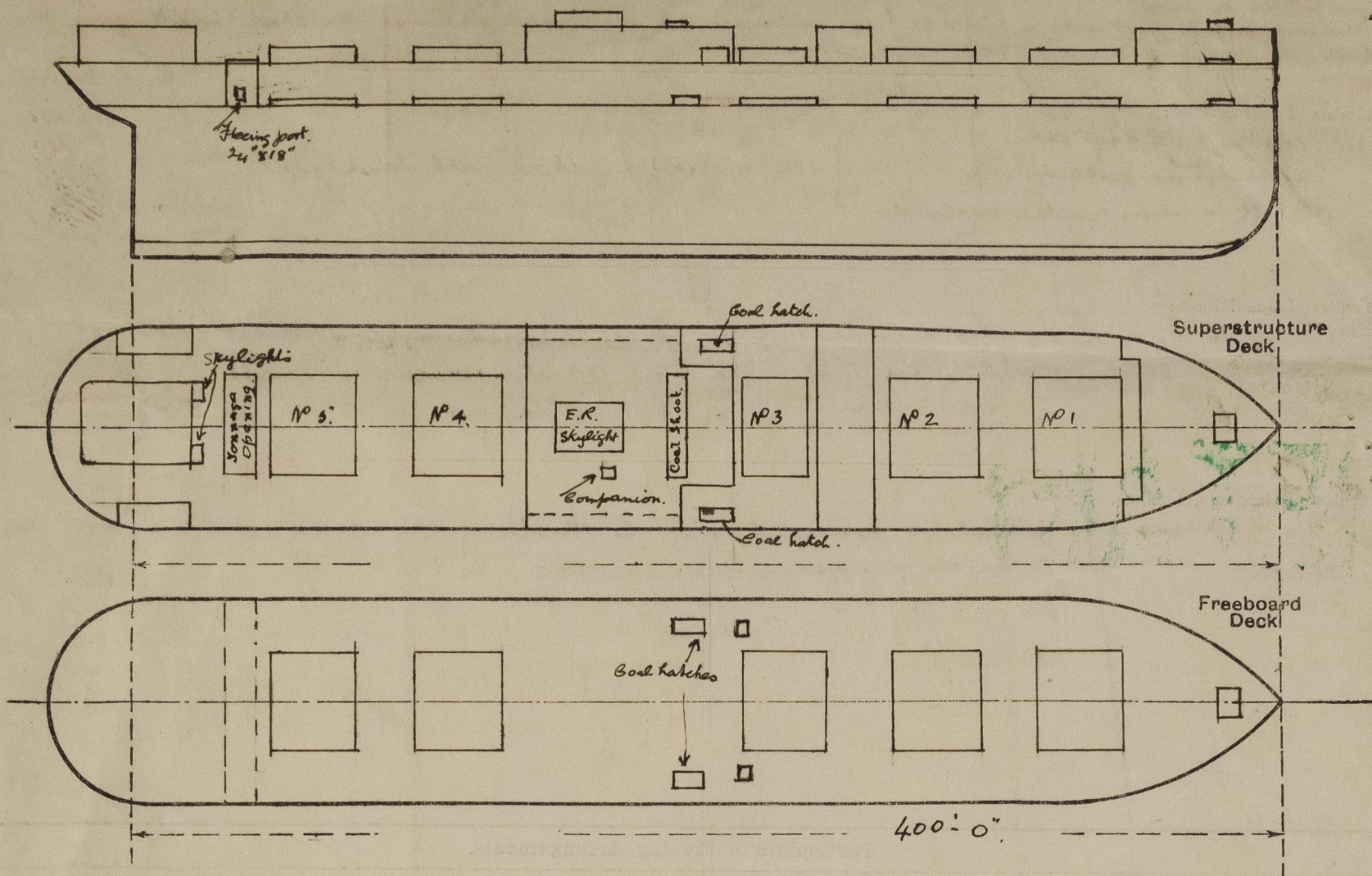
Lloyd's Register Foundation

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# Cairn

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:—

## Longage Opening aft:

Size of opening. 4'-6" x 18'-0" with 10" BA Boaming. Hatch covers Wood 3" thick. 3" Landing secured with kemp lashings.

Longage opening Bulk head 4' x 3' plating with stiffeners 3 1/2 x 3 x 30 spaced 34". The openings in the bulk head are 4'-0" x 3'-0" with 18" sill & they are closed with steel plates & hook bolts 10" apart. Size of plates 4'-2" x 3'-2".

## Additional Hatches

### Bunkers Hatches on Super Dk.

10'-9" x 6'-0"  
Ht. of Boaming 3'-0"  
Thickness 40.  
Cleats spaced 18"  
Hatches Wood 3"  
Landing 3".  
Tar paulins 3. ✓

### Bunkers Hatch Hd Dk.

4'-3" x 3'-6"  
9" BA Boaming  
Cleats spaced 15"  
Hatches Wood 3"  
Landing 3".  
Tar paulins 2. ✓

### Coal Hatch on B. Dk.

4'-6" x 15'-0"  
9" BA Boaming  
Cleats spaced 30.  
Hatches Wood 3"  
Landing 3".  
Tar paulins 3. ✓

### Hatch in F'cble.

4'-6" x 2'-6"  
Ht. of Boaming 15"  
Thickness 40.  
Hatches Wood 3"  
Landing 3".  
Cleats 2 on ends  
3 on sides.  
Tar paulins 3. ✓

### Hatches under F'cble.

4'-6" x 2'-6"  
9" BA Boaming  
Hatches Wood 3"  
Landing 3".  
Cleats 2 on ends  
3 on sides.  
Tar paulins 2. ✓

### Skylights aft

12"  
15"  
8 1/2" Scuttle fitted with deadlight. 4" from deck. ✓

Builder's name and yard number

Names of sister ships

Owners

Fee £ 13 : 12 : 0.

Received by me



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