

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Computation of Freeboard for ~~Steamer, Sailing Ship, Tanker~~having Forecastle, Bridge & PoopPort of Survey Plymouth

(Type of Superstructures.)

Date of Survey 17 & 18 Oct 1932

Ship's Name

Nationality and Port of Registry

Official Number

Gross Tonnage

Date of Build

"El Oro"British
London14610572671921-9Name of Surveyor A. T. ThomasMoulded Dimensions: Length 440.12 Breadth 57.16 Depth 33.11Moulded displacement at moulded draught = 85 per cent. of moulded depth 16470 tonsCoefficient of fineness for use with Tables .795Particulars of Classification + 100 A. 1.S.S. Hul. No. 2-29Carrying Petroleum in Bulk

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth <u>33.92</u>	(a) Where D is greater than Table depth (D-Table depth) R = <u>(33.99 - 29.34) 3 = + 13.95</u>	Moulded Breadth (B) <u>57.16</u>
Stringer plate <u>.07</u>	(b) Where D is less than Table depth (if allowed) (Table depth-D) R =	Standard Round of Beam = $\frac{B \times 12}{50} = 13.72$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures	Ship's Round of Beam = <u>14</u>
Depth for Freeboard (D) = <u>33.99</u>		Difference <u>.28</u>
		Restricted to
		Correction = $\frac{\text{Diff}^{\circ}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.28}{4} (1 - .3766) = - .02$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed	<u>92.00</u>	<u>92.00</u>	<u>7.5'</u>	<u>✓</u>	<u>92.00</u>
" overhang					
R.Q.D. enclosed					
" overhang					
Bridge enclosed... ..	<u>32.25</u>	<u>32.25</u>	<u>7.5'</u>	<u>✓</u>	<u>32.25</u>
" overhang aft					
" overhang forward					
Forecastle enclosed	<u>41.50</u>	<u>41.50</u>	<u>7.5'</u>	<u>✓</u>	<u>41.50</u>
" overhang					
Trunk aft					
" forward					
Tonnage opening aft					
" " forward					
Total	<u>165.75</u>	<u>165.75</u>	<u>5</u>		<u>165.75</u>

Standard Height of Superstructure 7.50'" " R.Q.D. ✓Deduction for complete superstructure 42"Percentage covered $\frac{S}{L} = 37.66$ " " $\frac{S_1}{L} = 37.66$ " " $\frac{E}{L} = 37.66$ Percentage from Table, Line A. ✓

(corrected for absence of fore-castle (if required))

Percentage from Table, Line B. Table 28.66

(corrected for absence of fore-castle (if required))

Interpolation for bridge less than 2L (if required)

Deduction = $42 \times .2866 = - 12.04$

SHEER CORRECTION.

Station	Standard Ordinate	S	Product	Actual Ordinate	Effective Ordinate	S	Product
A.P.	<u>54.01</u>	<u>1</u>	<u>54.01</u>	<u>54.00</u>	<u>54.00</u>	<u>1</u>	<u>54.00</u>
$\frac{1}{4}$ L from A.P.	<u>24.03</u>	<u>4</u>	<u>96.12</u>	<u>23.70</u>	<u>23.70</u>	<u>4</u>	<u>94.80</u>
$\frac{3}{8}$ L "	<u>5.94</u>	<u>2</u>	<u>11.88</u>	<u>5.90</u>	<u>5.92</u>	<u>2</u>	<u>11.84</u>
Amidships	<u>✓</u>	<u>4</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>4</u>	<u>✓</u>
$\frac{3}{8}$ L from F.P.	<u>11.88</u>	<u>2</u>	<u>23.76</u>	<u>12.00</u>	<u>12.00</u>	<u>2</u>	<u>24.00</u>
$\frac{1}{4}$ L "	<u>48.07</u>	<u>4</u>	<u>192.28</u>	<u>48.00</u>	<u>48.00</u>	<u>4</u>	<u>192.00</u>
F.P.	<u>108.02</u>	<u>1</u>	<u>108.02</u>	<u>106.5</u>	<u>106.50</u>	<u>1</u>	<u>106.50</u>
Total			<u>486.07</u>				<u>483.14</u>

Mean actual sheer aft = Deficient > 75%
Mean standard sheer aftMean actual sheer forward = Deficient
Mean standard sheer forwardLength of enclosed superstructure forward of amidships = ✓" " aft of " = ✓Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{2.93}{18} (.75 - .1853) = + .09$

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 = 33.99
Summer freeboard = 6.71
Moulded draught (d) = 27.28

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{4}$ inches = $6.82 = 6\frac{3}{4}$ Addition for Winter North Atlantic Freeboard (if required) = 4.40 = 4\frac{1}{2}

Deduction for Fresh Water.

Displacement in salt water at summer load water line

 $\Delta = 15561$

Tons per inch immersion at summer load water line

 $T = 51.35$ Deduction = $\frac{\Delta}{40T}$ inches $= 7.57$ $= 7\frac{1}{2}$

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.495 + .680}{1.36} = \frac{1.175}{1.36}$ Depth Correction 13.95 ✓Deduction for superstructures 12.04Sheer correction09Round of Beam correction04Correction for Thickness of Deck amidships ✓Other corrections, scantlings, etc. ✓14.04 12.08 + 1.96Summer Freeboard = 80.62SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck :-

Tropical Fresh Water Line above Centre of Disc	<u>14\frac{1}{2}</u>
Fresh Water Line " "	<u>7\frac{1}{2}</u>
Tropical Line " "	<u>6\frac{3}{4}</u>
Winter Line below " "	<u>6\frac{3}{4}</u>
Winter North Atlantic Line " "	<u>11\frac{1}{4}</u>

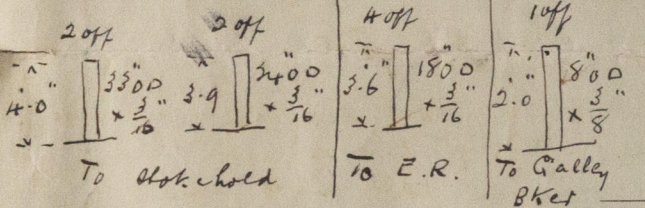
Tropical Fresh Water Freeboard 5-6\frac{1}{4}Fresh Water " " 6-1Tropical " " 6-1\frac{3}{4}Winter " " 7-3\frac{1}{4}Winter North Atlantic " " 7-4\frac{1}{2}

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS												
Description of Hatchway			N ^o 1									
Dimensions of Hatchway			9' x 12'		on fore deck 8 oil tights				on after deck 12 oil tights			
COAMINGS	{	Height above Deck	30 3/4"		hatches to cargo tanks				hatches to cargo tanks 2 oil			
		Thickness	40		6 summer tank hatches and				tight hatches to fuel oil tanks			
		Stiffeners	none		1 similar hatch for access to				10 oil tight summer tank hatches			
		Brackets, Stays										
HATCH BEAMS	{	Number	1		fore transfer pump room all 30"				30" high			
		Spacing	4' 5"		high 2 small hatches 88" x 9' x 6"				2 small hatches to aft cofferdam			
		Scantling and Sketch	7 1/2" x 3 1/2" x 3/8"		high with 4 butterfly 1" bolts 9 1/4"				same as forward			
			10 1/2" x 40		steel cover							
		Bearing Surface	3"									
FORE AND AFTERS	{	Number										
		Spacing										
		Unsupported Lengths										
		Scantling* and Sketch	none									
		Bearing Surface										
HATCH COVERS	{	Material	Aluminum		Steel cases 140							
		Thickness	3"		thick. shipped							
		How fitted	F. & A.		secured by rule							
		Bearing Surface	3' x 6 1/2"		37" apart							
Spacing of Cleats			Hatch ends 3' x 3' x 1/4"		D. A. at end							
Number of Tarpaulins			3		Latch							
<div>*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?</div>												

Particulars of fiddley, funnel and ventilator coamings

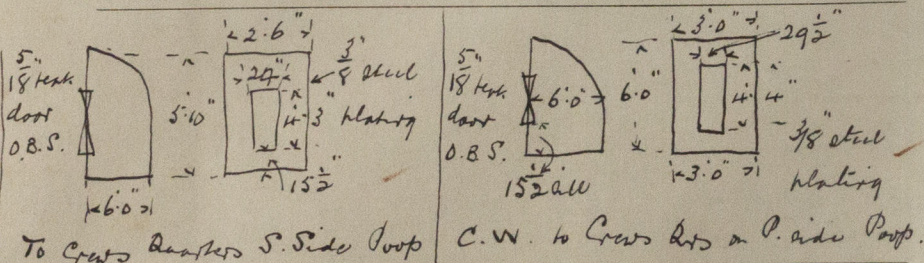
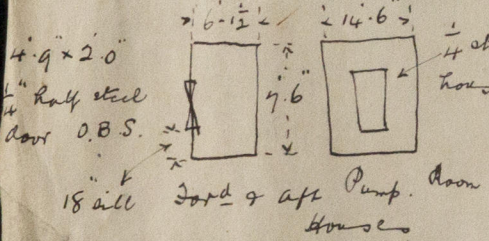


$\frac{1}{4}$ " steel E.R. styhlgs 17'7" x 12'1" x 10" at side with 8 - $\frac{1}{4}$ " steel flaps and 3 - 10" lights in each.
 $\frac{1}{4}$ " steel galley styhlgs 7'1" x 3'0" x 6" at side with 2 - $\frac{1}{4}$ " steel flaps and 3 - 8" lights in each.
 6 - $\frac{3}{16}$ " steel hinged covers over stockhold gratings. Lights require overhaul.

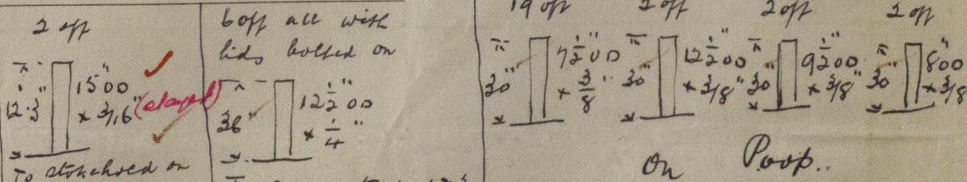
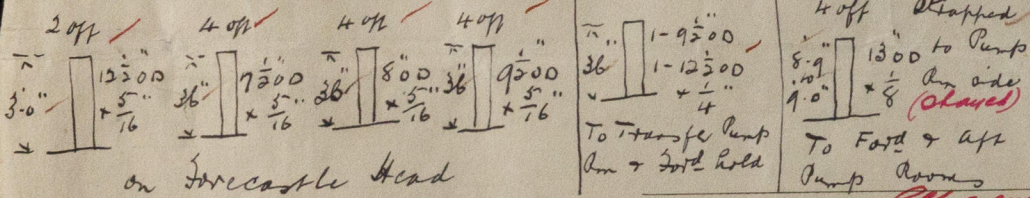
Particulars of Flush Bunker Scuttles:—

hone.

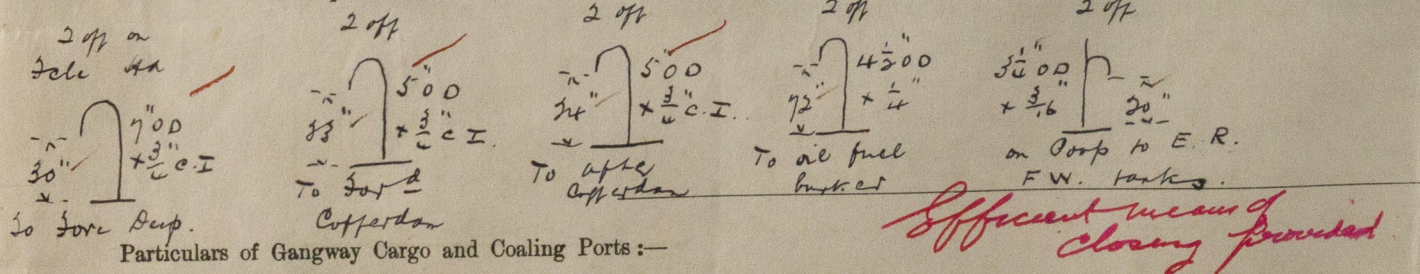
Particulars of Companionways :—



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



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



Particulars of Gangway Cargo and Coaling Ports:—

None.

66 050

Particulars of Scuppers and Sanitary Discharge Pipes — 4 ft above tween deck in fore hold. 1 P. & 1 S. straight pipe from crew wash hoses in fore hold stern valve. In Bridge space: 2 P. & 1 S. stern valves from officer W.C. & 4 straight pipes from back room thro ship's side. In Poop: Port side 3 stern valves fitted on ship's side below tween deck in E.R. Starboard side one fitted in same line stern valves connected to ship's side cast iron piece. 1 S.V. from galley on P.S. above tween deck in E.R.

Particulars of Side Scuttles: In Fore: on Foreboard deck 12-10" lights (one without D.L.). on deck below 12-9" lights all with D.L. In Bridge space: 5-12" lights fitted with D.L. In Poop: P.S. 11-15" lights with D.L. (excepting 2 missing). S.S. 10-15" lights all on foreboard deck. and 2-9" lights with D.L. in stern.

Particulars of Guard Rails: — $\frac{1}{4}$ " steel bulwarks running P.S. sides of F & A. with 3-6" high with 6" x 3" x $\frac{3}{8}$ " B.A. rail on top, and 6" x 3" x $\frac{3}{8}$ " B.A. stays pitched about 6' apart.

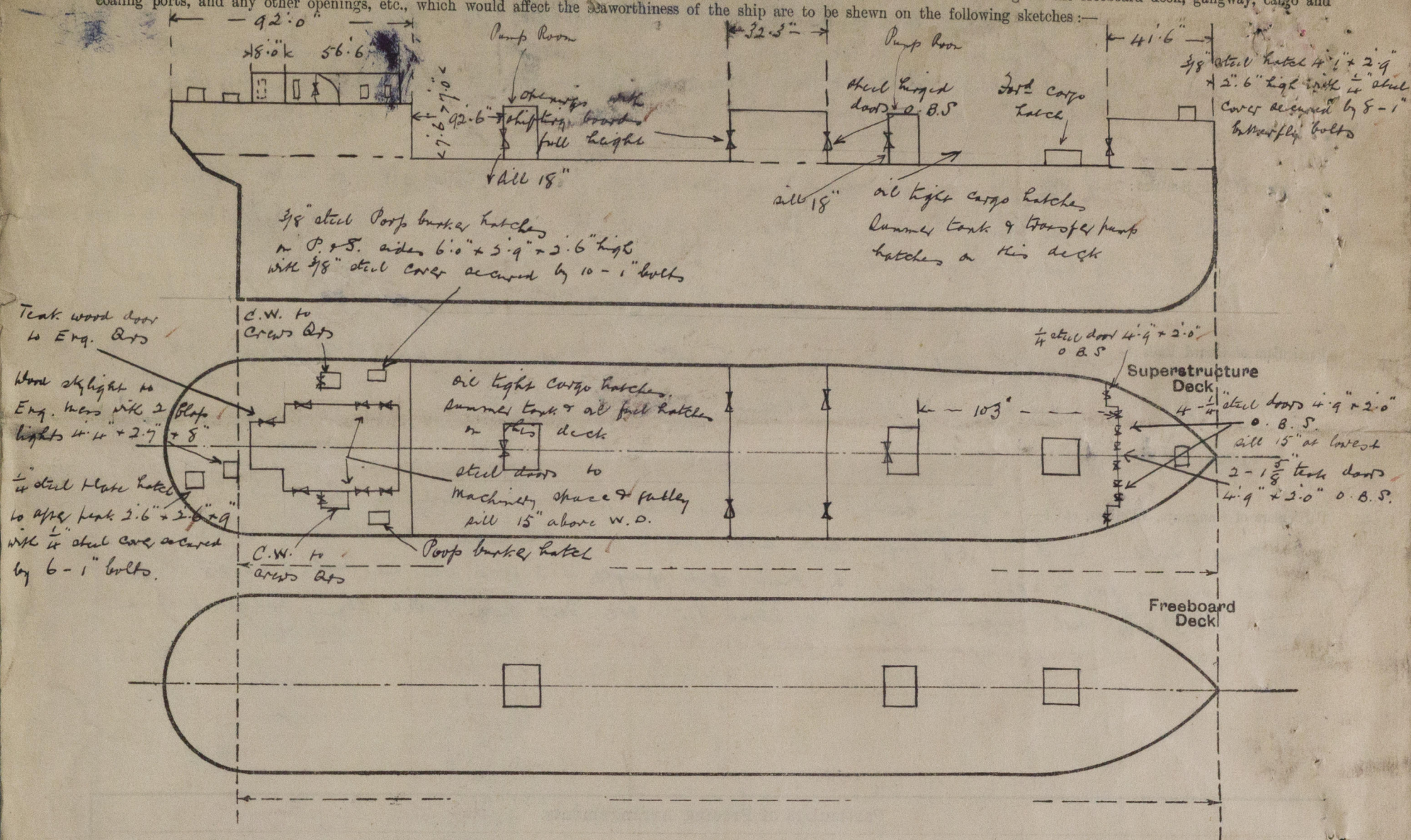
Particulars of Gangways, Lifelines, etc.: — Flying Bridge connecting Fore to Bridge & Bridge to Poop: 3-0" wide $\frac{1}{4}$ " diamond plate tread riveted to 3" x 3" x $\frac{3}{8}$ " angles each side full length. stanchions about 5' apart 3' high with single 1" bar rail running fore & aft. Supported by built steel uprights 3-3" wide with side angles 5" x 3" x $\frac{3}{8}$ ", and cross tie angles 3" x 3" x $\frac{5}{16}$ " with maximum pitch of about 11". One fore cargo hatch flying bridge portable. *Iron rail stanchion (3/2 x 3 x 3/8) fitted*

Particulars of Freeing Arrangements. <i>For particulars see sketch attached</i>						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well	156' 0"	3' 6"	6 @ 36" x 22" 3 @ 24" x 18"	9	192 sq ft 111 sq ft	128 1/2 sq ft
Forward Well	114' 10"	3' 6"	4 @ 36" x 22" 3 @ 24" x 18"	7	108 sq ft 30 sq ft	100 1/2 sq ft
State position of each freeing port } After Well: — <i>For Bridge aft Bld: 12' 3", 21' 5", 8' 7", 3' 4", 3' 4", 4' 1", 36' 3", 30' 10", 30' 2" edge to edge</i> (F. and A. position and height above deck edge) } Forward Well: — <i>Fore Bld: 21' 8", 30' 4", 30' 0", 15' 1", 2' 0", 5' 8", 3' 0" back 12" above deck</i> State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such: — <i>3 bars 1" dia 4 1/2" apart in 36" x 22", one bar in other.</i>						
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	vertical plating	3/8"	9" x 4" x 5" B.A.	30"	brackets top & bottom	no openings	✓	7' 6"
Raised Quarter Deck Bulkhead ...	vertical plating	1/4"	6" x 3" x 5/8" B.A.	30"	brackets top & bottom	4' 0" x 4' 10"	18"	7' 6"
Bridge, After Bulkhead	2' 1"	1/2"	8" x 4" x 5/8" B.A.	30"	do	4' 9" x 1' 11"	18"	7' 6"
Bridge, Forward Bulkhead	vertical plating	1/4"	3" x 2 1/2" x 5/16"	30"	none	4' 9" x 2' 0"	15"	7' 6"
Forecastle Bulkhead	✓	✓	✓	✓	✓	✓	✓	✓
Trunk, Aft	✓	✓	✓	✓	✓	✓	✓	✓
Trunk, Forward	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	1/4" above 3" W.O.	7/16"	4" x 3" x 5/16" A.	30"	brackets a top	4' 10" x 2' 0"	15" above W.O.	7' 0"
Exposed Machinery Casings on Superstructure Decks <i>Porto deck</i> ...	✓	✓	✓	✓	✓	✓	✓	✓
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	no openings
Raised Quarter Deck Bulkhead ...	✓
Bridge, After Bulkhead	2 openings closed by 3" shifting boards fitted full length: angle 3" x 3" x 5/16" forming channel
Bridge, Forward Bulkhead	2-3/8" steel plate hinged doors with locks O.B.S. locks require overhaul
Forecastle Bulkhead	6 steel plate hinged doors & 2 teak wood doors all O.B.S. all locks require overhaul
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	none
Exposed Machinery Casings on Superstructure Decks <i>Porto deck</i> ...	3-1/4" steel plate doors on P.S. sides O.B.S.: 1-18" teak door on P.S. to Eng. Rm. O.B.S. all locks require overhaul
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	none
Deckhouses on Flush Deck Ships ...	none.

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 shown on the following sketches:—



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

All locks on Forecastle bulkhead, Bridge front bulkhead, and Poop require to be
weathered & placed in order.

The Freeboard survey has been held afloat in the River Dart.

Builder's name and yard number

Armstrong Whitworth & Co Ltd

Names of sister ships

Owners

Robinson Oil Fields Ltd

Fee £

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Received by me



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