

Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.

173 FEB 1

Computation of Freeboard for ~~Steamer, Sailing Ship, Tanker~~
having Loop, Bridge & F'clePort of Survey Newcastle on Tyne

(Type of Superstructures.)

Date of Survey 12 Feb. 1936

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
<u>M. S. MACTRA</u>	<u>British London</u>	<u>164589</u>	<u>6193</u>	<u>1936</u>

Name of Surveyor H. I. Akester

Moulded Dimensions: Length 425 ✓ Breadth 54.25 ✓ Depth 31.0 ✓
Moulded displacement at moulded draught = 85 per cent. of moulded depth 13435 tons
Coefficient of fineness for use with Tables .774 ✓

Particulars of Classification Contemplated
+100 A1
carrying petroleum
in bulk

Depth for Freeboard (D)
Moulded depth ... 31.0 ✓
Stringer plate75 amidships
.06 bridge end
Sheathing on exposed deck
 $T \left(\frac{L-S}{L} \right) =$
Depth for Freeboard (D) = 31.06

Depth correction
(a) Where D is greater than Table depth 2.73
(D-Table depth) R = $(31.06 - 28.33) \times 3.00$
= +8.19"
(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) 54.25
Standard Round of Beam = $\frac{B \times 12}{50} = \frac{13.02}{50}$
Ship's Round of Beam = 13.2
Difference Excess .18"
Restricted to
Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{.18}{4} \times .5822 = -.027$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed <u>at side</u>	<u>89.67</u>				
" overhang ... <u>at centre</u>	<u>91.0</u>				
R.Q.D. enclosed		<u>89.67</u>	<u>7.5</u>	<u>✓</u>	<u>89.67</u>
" overhang					
Bridge enclosed <u>at side</u>	<u>39.67</u>				
" overhang aft <u>at centre</u>	<u>37.0</u>	<u>39.67</u>	<u>7.5</u>	<u>✓</u>	<u>39.67</u>
" overhang forward	<u>.5</u>	<u>.38</u>			<u>.38</u>
F'cle enclosed		<u>47.875</u>	<u>7.5</u>	<u>✓</u>	<u>47.87</u>
" overhang					
Trunk aft					
" forward					
Tonnage opening aft					
" forward					
Total	<u>177.71</u>	<u>177.59</u>			<u>177.59</u>

Standard Height of Superstructure 7'-6"
" " R.Q.D. ✓
Deduction for complete superstructure +2.00
Percentage covered $\frac{S}{L} = 41.81\%$
" $\frac{S_1}{L} = 41.78\%$
" $\frac{E}{L} = 41.78\%$
Percentage from Table, Line A. Tanker
(corrected for absence of forecastle (if required)) 32.78%
Percentage from Table, Line B.
(corrected for absence of forecastle (if required))
Interpolation for bridge less than 2L (if required)
Deduction = 42.00 × .3278 = -13.78"

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P.	52.50	1		52.50	53.75	53.75	1		53.75
$\frac{1}{2}$ L from A.P.	23.365	4		93.46	23.875	23.875	4		95.50
$\frac{2}{8}$ L	5.79	2		11.54	6.375	6.375	2		12.75
Amidships	✓	4		✓	✓	✓	4		✓
$\frac{3}{8}$ L from F.P.	11.54	2		23.08	11.75	11.75	2		23.50
$\frac{1}{2}$ L	46.73	4		186.92	47.25	47.25	4		189.00
F.P.	105.00	1		105.00	105.5	105.50	1		105.50
Total				472.50					480.00

Mean actual sheer aft = Excess
Mean standard sheer aftMean actual sheer forward = Excess
Mean standard sheer forwardLength of enclosed superstructure forward of amidships = Tanker
" " aft of " = ✓Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{7.50}{18} \left(.75 - .209 \right) = -.23"$ 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 = 31.06
Summer freeboard = 5.62
Moulded draught (d) = 25.44

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{4}$ inches = $6.36 = 6\frac{1}{4}"$ Addition for Winter North Atlantic Freeboard (if required) = $6\frac{1}{4} + 4\frac{1}{4} = 10\frac{1}{2}"$

Deduction for Fresh Water.

Displacement in salt water at summer load water line

 $\Delta = 12976$

Tons per inch immersion at summer load water line

T = 47.3Deduction = $\frac{\Delta}{40T}$ inches= 6.86= 6\frac{3}{4}"

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

 $\frac{.774 + .68}{1.36} = \frac{1.454}{1.36}$

Depth Correction ...

Deduction for superstructures ...

Sheer correction ...

Round of Beam correction ...

Correction for Thickness of Deck amidships ...

Other corrections, scantlings, etc. ...

68.65

73.40

+ -

8.19 -

- 13.78

- .23

- .07

- -

- -

8.19 14.08 - 5.89

Summer Freeboard = 67.51

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

Tropical Fresh Water Line above Centre of Disc ... 13"
Fresh Water Line " " ... 6\frac{3}{4}"
Tropical Line " " ... 6\frac{1}{4}"
Winter Line below " " ... 6\frac{1}{4}"
Winter North Atlantic Line " " ... 10\frac{1}{2}"

Tropical Fresh Water Freeboard ...

Fresh Water " ...

Tropical " ...

Winter " ...

Winter North Atlantic " ...

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS										
Description of Hatchway		On upper DK to main tanks	On upper DK to cofferdams	upper DK to store	Upper DK to store	F'cle DK to trunked to store	F'cle DK to store	On Poop DK to steering comp	On Poop to steering comp	
Dimensions of Hatchway		24' @ 4' x 3'	8' @ 1-11' x 1-6'	2-6' x 2-6'	2-6' x 2-6'	8' x 10'	2-6' x 2-6'	2-3' x 2-6'	2 @ 15' dia.	
COAMINGS	Height above Deck	30"	10"	9"	3 x 3 angle	30"	12"	11"	7"	
	Thickness	40	5	5	Coaming	44	5	5	Bull plate	
	Stiffeners					7 x 3 x 40 stayed side only for pipes			Coaming	
	Brackets, Stays	✓								
HATCH BEAMS	Number									
	Spacing									
	Scantling and Sketch									
	Bearing Surface	✓	✓	✓	✓	✓	✓	✓	✓	
FORE AND AFTERS	Number									
	Spacing									
	Unsupported Lengths									
	Scantling* and Sketch	✓	✓	✓	✓	✓	✓	✓	✓	
HATCH COVERS	Material	Steel	Bolted plate	Steel	Wood	Steel	Steel	Steel	Steel	
	Thickness	Covers	plate Cover	Cover	2 1/2"	Cover	Cover	Cover	Cover	
	How fitted	.60	.50	.40	F & A 3"	.40	.40	.40	.40	
	Bearing Surface				Stiffened					
Spacing of Cleats		Toggles		Toggles	move	Toggles	Toggles	Toggles	Two Toggles	
Number of Tarpaulins		12 x 15' apart	✓	7 1/2' off ends 7 1/2' apart	fitted	9' off corners 5 1/8' apart	7 1/2' x 15'	6' x 15'	* each	

*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 fiddley, funnel and ventilator coamings :—

Fidley, Funnel & Vents in efficient Condition.
Engine & galley Skylights of Steel Strongly Constructed.

Particulars of Flush Bunker Scuttles :—

none /

Particulars of Companionways :—

Strongly Constructed Steel entrances to pump rooms in wells,
each having Steel W.T. door $5' \times 3'$, 18" sill and operated
from both sides & closed watertight.

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

7 @ 6" dia. on Bridge Sk. to Bridge two ends 30 Coamings
 4 @ 14" } on Boat Sk. to Loop Accn. 30 "
 1 @ 15" }
 1 @ 17" } to lower tweens. 30 "
 1 @ 12" }
 1 @ 8" }
 8 @ 12" on Loop Sk. to Steering Gear Space 30 "
 2 @ 6" } to Hospital 30 "
 10 Vent. --- to refing. machy. room 30 "
 8 @ 8" } to Prop. passageways 30 "
 6 @ 4" } on Loop G.N.V. to W.C.'s 18" high
 4 @ 2 1/2" dia. on upper Sk. to P.R.S. Staged to Houses.

NOTE. All Ventilators constructed in accordance with the Rules & Coamings
 closed with wood plugs & canvas covers.

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

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

1 @ 4½" on F'dle	* fore peak 18" high	2 @ 3½"	} on poop & K. to A.B. tanks 18" high
2 @ 4	* deep tank 18"	4 @ 2	
4 @ 3	U. & K. * Cofferdams 6 ft. Stages	4 @ 3	
2 @ 3	* Bunkers 6 ft. "	2 @ 3	- - - * T.W. tanks
		2 @ 3	- - - * After Peak } 18" high

Air pipes closed with gauge or wood plugs.

Particulars of Gangway Cargo and Coaling Ports :—

None

Particulars of Scuppers and Sanitary Discharge Pipes:—

4 @ 2 1/2" Scuppers from f'cle tween-decks
2 @ 4" Soil pipes Aft.
2 @ 2" Scuppers from Poop Store
2 @ 2" Scuppers from Poop W.C. Port
2 @ 2" Scuppers from Wash place
2 @ 2" Scuppers from Pantry in Poop
2 @ 2" Scuppers from Bathroom

3 @ 2" Scuppers from Engro. W.C. or Poop. Stairs

2 @ 2" & 2 @ 2 1/2" Vegetable room
2 @ 2 1/2" Scuppers from Steering Compt.
3" Scupper from Cold Stores in Poop
3 @ 4" soil pipes from Poop Aft.

All these Scuppers & soil pipes discharge below upper deck & are fitted with non-return gunmetal storm valves at Ships Sides; additionally those marked X are fitted with non detachable screw plugs.

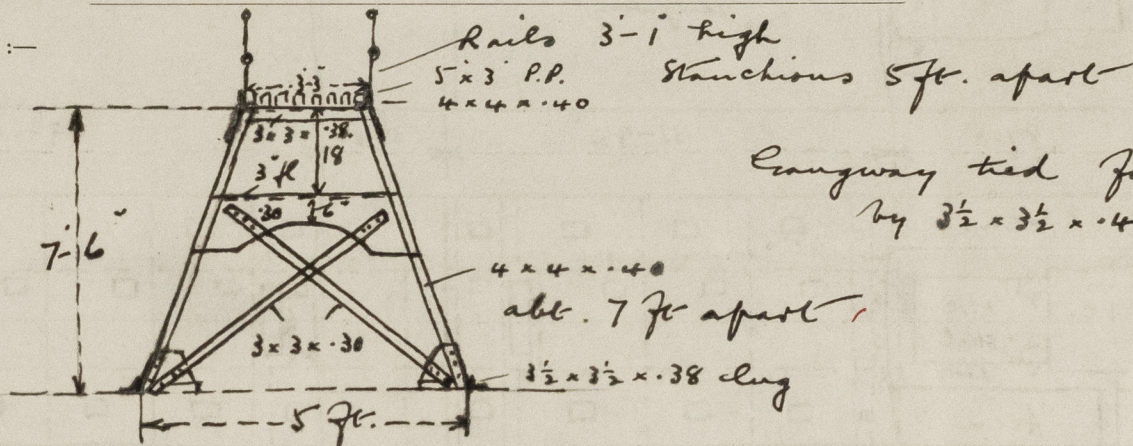
Particulars of Side Scuttles:—

Scuttles in Poop, Bridge & f'cle of substantial construction & provided with hinged deadlights.

Particulars of Guard Rails:—

Rails on f'cle & Poop 3'-9" high having 3 rods & stanchions 4 ft to 5 ft. apart. Rails on Bridge & in wells 3'-6" high, having 3 rods & stanchions 5 ft. apart. Part steel bulwark on upper deck in wells 3'-6" high, efficiently constructed and supported.

Particulars of Gangways, Lifelines, etc.:—



Gangway tied fore & aft by 3 1/2 x 3 1/2 x .40 diagonals.

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 ...	14-6 to Poop 50-0 to Bridge	3'-6"	36 x 15	3	Rails fitted for not less than half the wells.	
Forward Well ...	14-33 to Bridge 43-0 to f'cle	3'-6"	36 x 15	2		

State position of each freeing port ... After Well:— 10-5' from Poop front & 2'-6" & 2-4 ft. from Bridge end.
(F. and A. position and height above deck edge) Forward Well:— 2-5' - Bridge " & 23-25' from f'cle front
State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— Vertical bars 9" apart. all distances to Centre of port
Additional area where sheer is less than standard.

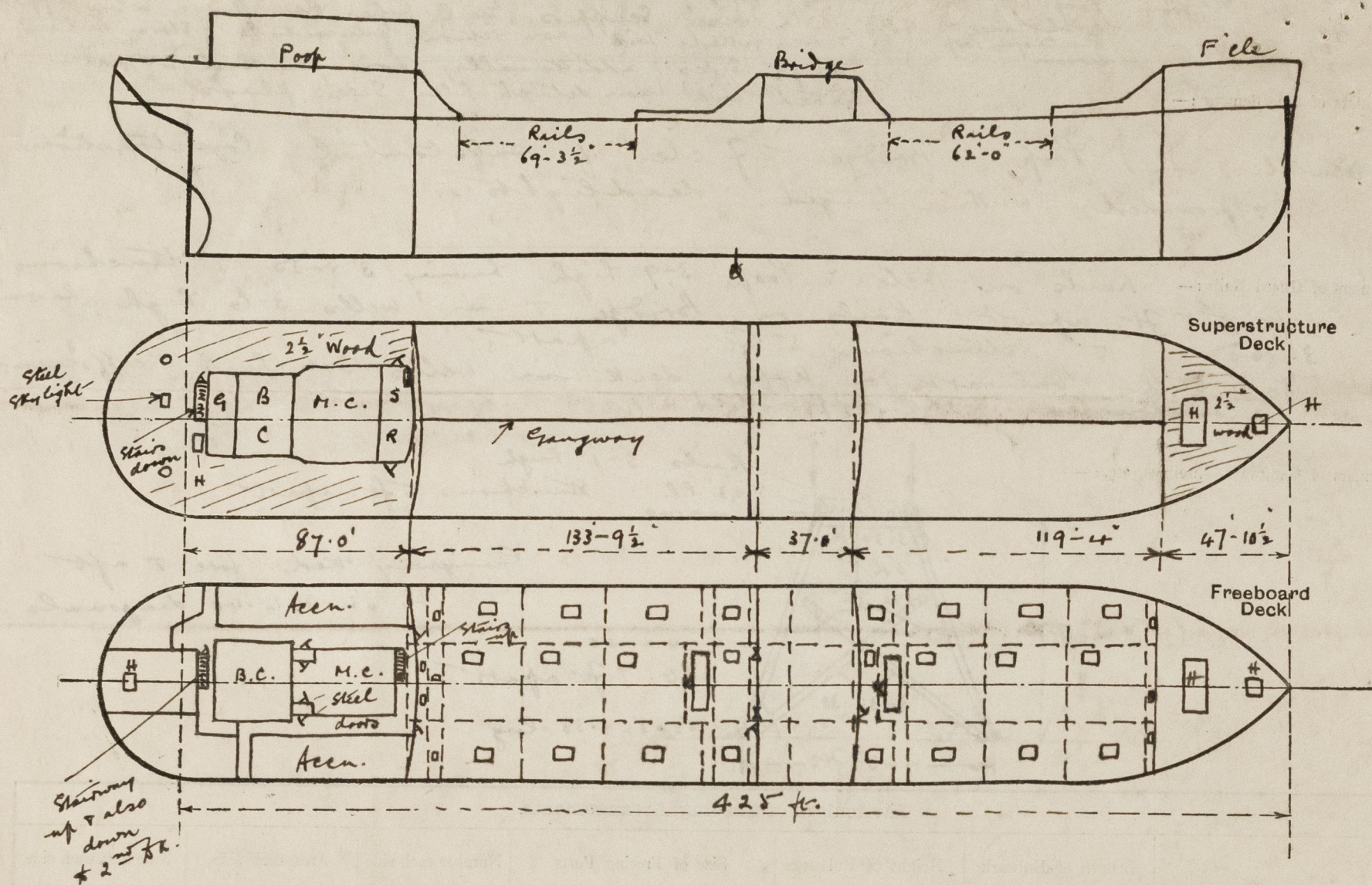
Particulars of Superstructures, Trunks, Casings, Deckhouses.

	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead ...	✓	.444	9x3 1/2 x .495 .475	29 1/2 to 32	hump top bottom	2 @ 5' x 2'-6"	18"	7'-6"
Raised Quarter Deck Bulkhead ...	✓							
Bridge, After Bulkhead ...	✓	.30	4 x 3 x .38 .32 L	30 to 33	top & bottom ribs to angles	2 @ 5'-1 x 3'-1 1 @ 5' x 2'	18"	7'-6"
Bridge, Forward Bulkhead ...	✓	.444	9x3 1/2 x .495 .475	24 to 30	hump top bottom	1 @ 5' x 2'-6"	18"	7'-6"
Forecastle Bulkhead ...	✓	.30	4 x 3 x .32 L stanchions	30 to 36	Bottom ribs in 8x angle	2 @ 5' x 1'-9 1/2 8 @ 4'-9 x 2'	18"	7'-6"
Trunk, Aft ...	✓							
Trunk, Forward ...	✓							
Exposed Machinery Casings on Free-board or Raised Quarter Decks ...	✓							
Exposed Machinery Casings on Super-structure Decks ...	✓	.30	3 x .32 plate	26 1/4	✓	4 @ 5' x 2' 1 @ 4'-10 x 2'-4	15 to 18"	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 ...	Steel W.T. doors & S operated from both sides.
Raised Quarter Deck Bulkhead ...	✓
Bridge, After Bulkhead ...	Two openings covered with Steel plates held in position by hook bolts & one steel door on Starboard side, operated from both sides.
Bridge, Forward Bulkhead ...	Steel W.T. door Starboard. operated from both sides.
Forecastle Bulkhead ...	Eight wood doors into Aft. Two steel W.T. doors to Store & Pump Rooms below, all operated from both sides.
Exposed Machinery Casings on Free-board or Raised Quarter Decks ...	✓
Exposed Machinery Casings on Super-structure Decks ...	Steel W.T. doors to Smoke room & entrance to Aft. Steel doors to
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	✓ Culley all operated from both sides. (none in machy. casings)
Deckhouses on Flush Deck Ships ...	✓

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:—

Builder's name and yard number

Luan Hunter & Wigham Richardson Ltd. No 1571

Names of sister ships

Same Builders No 1509 — Elona

Owners

Anglo Saxon Petroleum Co. Ltd.

Fee £

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