

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Index. No. 33019
(For London Office only.)

14 JUN 1932

No. 6690

Computation of Freeboard for Steam-Propelled Ship, Tanker
having Pop-Bridge Forecastle
LACKHAW (Type of Superstructures.) HONG KONG

Port of Survey San Francisco
Date of Survey 19th May 1932
Name of Surveyor David Millar
Particulars of Classification 10091 Carrying Petroleum in bulk.

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
"VACUOLINE"	<u>BRITISH LONDON</u>	<u>160633</u>	<u>8670</u>	<u>1929-1930</u>

Moulded Dimensions: Length 458.5 Breadth 62.5 Depth 36.5
Moulded displacement at moulded draught = 85 per cent. of moulded depth (31.03) 19830 tons
Coefficient of fineness for use with Tables 778

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth ... <u>36.50</u>	(a) Where D is greater than Table depth <u>36</u> (D - Table depth) R = <u>(36.56 - 30.67) x 3</u> <u>+17.67</u>	Moulded Breadth (B) <u>62.5</u> Standard Round of Beam = $\frac{B \times 12}{50} = 15$ Ship's Round of Beam = <u>15.5</u> Difference Restricted to Correction = $\frac{\text{Diff}^*}{4} \times \left(1 - \frac{S_1}{L}\right) = \frac{5}{4} \times .58 = .07$
Stringer plate ... <u>06</u>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <u>✓</u>	
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures <u>✓</u>	
Depth for Freeboard (D) = <u>36.56</u>		

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	117.79	117.79	8'0"	✓	117.79
" overhang ...	✓	✓	✓	✓	✓
R.Q.D. enclosed ...	✓	✓	✓	✓	✓
" overhang ...	✓	✓	✓	✓	✓
Bridge enclosed...	31.12	31.12	8'0"	✓	31.12
" overhang aft ...	8.88	6.67	✓	✓	6.67
" overhang forward	2.00	1.00	✓	✓	1.00
Fore enclosed <u>APEN</u> ...	41.21	35.03	8'0"	✓	35.03
" overhang ...	✓	✓	✓	✓	✓
Trunk aft ...	✓	✓	✓	✓	✓
" forward ...	✓	✓	✓	✓	✓
Tonnage opening aft ...	✓	✓	✓	✓	✓
" forward	✓	✓	✓	✓	✓
Total ...	201.00	191.61			191.61

Standard Height of Superstructure 7'6"
" " R.Q.D. ✓
Deduction for complete superstructure 42.00
Percentage covered $\frac{S}{L} = 43.84\%$
" " $\frac{S_1}{L} = 41.79\%$
" " $\frac{E}{L} = 41.79\%$
Percentage from Table, Line A. Tanker 32.79
(corrected for absence of forecastle (if required))
Percentage from Table, Line B.
(corrected for absence of forecastle (if required))
Interpolation for bridge less than 2L (if required) ✓
Deduction = $42.00 \times .3279 = -13.77$

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	55.85	1	✓	55.85	48.00	48.00	1	✓	48.00
1/4 L from A.P. ...	24.85	4	✓	99.40	20.98	20.98	4	✓	83.92
1/2 L " ...	6.14	2	✓	12.28	5.23	5.23	2	✓	10.46
Amidships ...	✓	4	✓	✓	✓	✓	4	✓	✓
3/4 L from F.P. ...	12.32	2	✓	24.64	10.48	10.48	2	✓	20.96
3/4 L " ...	49.28	4	✓	197.12	41.80	41.80	4	✓	167.20
F.P. ...	112.00	1	✓	112.00	96.00	96.00	1	✓	96.00
Total ...				500.64					426.22

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{75 - S}{2L} \right) = \frac{74.42}{18} \times .525 = +2.17$

If limited on account of midship superstructure.

If limited to maximum allowance of 1 1/2 ins. per 100 ft. ✓

Deduction for Tropical Freeboard.

Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = 36.64
Summer freeboard = 7.46
Moulded draught (d) = 29.10

Deduction for Tropical freeboard and addition for

Winter freeboard = $\frac{d}{4}$ inches = 7.27 = 7 1/4Addition for Winter North Atlantic Freeboard (if required) = 4.58 = 4 1/2

Deduction for Fresh Water.

Displacement in salt water at summer load water line

 $\Delta = \checkmark 18600$

Tons per inch immersion at summer load water line

 $T = \checkmark 57.4$ Deduction = $\frac{\Delta}{40T}$ inches $= \checkmark 8.10 = 8$

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

1.458
1.36

Depth Correction ...

Deduction for superstructures ...

Sheer correction ...

Round of Beam correction ...

Correction for Thickness of Deck amidships ...

Other corrections, scantlings, etc. ...

77.70
83.30

+	-
18.00	
17.67	✓
✓	13.77
2.17	✓
✓	.07
20.24	
19.84	13.84
	+ 6.40

Summer Freeboard = 89.51SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Steel, Deck: 7' 5 1/2"

Tropical Fresh Water Line above Centre of Disc ... 15 1/4"
Fresh Water Line " " ... 8"
Tropical Line " " ... 7 1/4"
Winter Line below " " ... 7 1/4"
Winter North Atlantic Line " " ... 11 3/4"

Tropical Fresh Water Freeboard ... 6' 2 1/4"
Fresh Water " " ... 6' 9 1/2"
Tropical " " ... 6' 10 1/4"
Winter " " ... 6' 0 3/4"
Winter North Atlantic " " ... 5' 5 1/4"

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS											
			CARGO HATCH	HATCH TO CHAIN LOCKER	HATCH TO FOREPEAK	OIL TIGHT HATCHES & CORRUGATED	AT HATCHES FOR OIL TIGHT PORT & STB	AT HATCHES FOR OIL TIGHT PORT & STB	AT HATCHES FOR OIL TIGHT PORT & STB	CARGO HATCH	HATCH TO FOREPEAK
Description of Hatchway			...	...	...	...	...	...	...	...	...
Dimensions of Hatchway			...	...	...	...	...	...	...	...	...
COAMINGS	Height above Deck Thickness Sides Stiffeners Brackets, Stays	...	32"	26"	26"	36"	36"	36"	36"	30"	30"
		...	44"	375"	375"	40"	40"	40"	40"	375"	375"
		...	44"	375"	375"	40"	40"	40"	40"	375"	375"
		...	as per rule	as per rule	as per rule	as per rule	as per rule	as per rule	as per rule	as per rule	as per rule
		...	rule	rule	rule	rule	rule	rule	rule	rule	rule
HATCH BEAMS	Number Spacing Scantling and Sketch	...	✓	✓	✓	✓	✓	✓	✓	✓	
		...	✓	✓	✓	✓	✓	✓	✓	✓	✓
FORE AND AFTERS	Number Spacing Unsupported Lengths Scantling* and Sketch	...	✓	✓	✓	✓	✓	✓	✓	✓	✓
		...	✓	✓	✓	✓	✓	✓	✓	✓	✓
HATCH COVERS	Material Thickness How fitted Bearing Surface	...	STEEL 50"	WOOD 3"	WOOD 3"	STEEL 60"	STEEL 60"	STEEL 50"	STEEL 50"	WOOD 3"	WOOD 3"
		...	5' x 40"	1 1/2"	2 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2 1/4"	2 1/2"
Spacing of Cleats		...	24"	15"	15"	13"	13"	3"	3"	20"	20"
Number of Tarpaulins		...	SWING BOLTS	TWO	TWO	SWING BOLTS	SWING BOLTS	APART	APART	TWO	TWO
*Are wood fore and afters steel shod at all bearing surfaces? <input checked="" type="checkbox"/>											
Are battens and wedges efficient and in good condition? <input checked="" type="checkbox"/>											
Are tarpaulins in good condition and in accordance with rule requirements? <input checked="" type="checkbox"/>											
Are lashings provided in accordance with rule requirements? <input checked="" type="checkbox"/>											

Particulars of fidley, funnel and ventilator coamings
FIDLEY: 15'6" x 11'0" oval, no starting grates to casing top, supported by two ball angle iron struts, 1/8" x 6" at the top by two casing ball angle iron.
FUNNEL: 6'0" x 5'6" x 3'8" deep brackets from casing sides. P.V. VENTILATORS: Coamings to Engine room 1/2" x 6" x 26" dia. Two 12" dia 30" above casing top. 375
 coamings to passage room 2'6" x 16" x 16" dia. 1/2" x 6" x 26" dia. unmounted. GALLEY: 4'0" x 6" dia. 375 coaming 30" above casing top.
ENGINE ROOM SKYLIGHT: 3'0" x 13'0" steel plate on angle steel flaps with ball eyes, each flange lifting gear operated from the engine room side bracket 1/4"
 side from casing supporting the 1/2" x 6" x 26" x 16" spaced 3'0" apart.
Wood plugs & bural covers for closing ventilators

Particulars of Flush Bunker Scuttles:—

Particulars of Companionways: Fore and Aft Room Port Side only: - 6'0" x 3'6" x 6'6" high 375 plating one W.T. steel door operated from both sides, craning 8' above deck. Starboard Side only: - 5'10" x 3'0" x 6'6" high 375 plating non W.T. steel door craning 19' above deck. Main Pump Room W.T.: - 20'0" x 9'6" x 8'0" high 43 plating 1/2" x 3/8" angle stiff. spaced 26" to 30" apart bracketed top both ways 15' x 15' - 375 brackets steel W.T. door on aft side operated from both sides, 24" craning above deck. On top of sides steel height with 15 craning 10' long steel flaps.

[illegible]

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks: POOP DECK:- Her pipes to the aft peak tank double bottom tanks openings 25 above deck PEE & DECK:- 14 in the fore of amidships a 6" steel pipe opening 12 above deck for the fore tank double bottom tanks in fore hold openings above deck 10 in each 6" steel pipe UPPER DECK:- Besides the air pipes from the forward vents fuel oil tanks have 3 in steel pipes with grommets attached to side coamings of hatchways the openings are 10" above the deck aft 13" above the deck forward these pipes, are frequently attached to hatch lifting standlines. All the main cargo summers oil tanks are connected to a 4" steel pipe ventilating system which led up the fore main mast, a canvas valve is fitted at each hatch

Automatic Closing appliances fitted to all air pipes on forward half

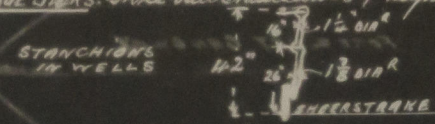
Particulars of Gangway Cargo and Coaling Ports :—

—None

Particulars of Sumpers and Sanitary Discharge Pipes
 One 12" vertical discharge from forward pump room on port side located 6' below fuel tank deck fitted with a valve
 One 12" vertical discharge from main pump room located on starboard 6' below fuel tank deck fitted with a valve with
 a handle rod operated from above fuel tank deck. A 3" pump room drain discharge on starboard 6' below fuel tank deck
 fitted with 3 way x three service valve operated from pump room. Sanitary discharge from quarters in Port Cell three shell below
 fuel tank deck fitted with 1.5" return valve.

Particulars of Side Scuttles: All air ports for accommodation in the poop, poop front, bridge front & cut ball.
Bridge side plating. Side scuttle plating have permanently hinged deadlights

Particulars of Guard Rails: In wells two ball stanchions 3' 6" high with 1/2 galvanized iron chain with 5' horizontal pulleys. Stanchions spaced 60" to 65" apart. Wells to right of clear track Left Deck: Three ball stanchions 3' 9" high spaced 35" to 38" apart. Top rail 1 1/2 in. two lower rails 1" each. Stanchions taper from 1 1/4" to 1 in. Clear Track Deck: Three ball stanchions 3' 9" high spaced 46" to 52" apart. Top rail 1 1/2 in. two lower rails 1" each. Stanchions taper from 1 1/2" to 1 in.



Particulars of Gangways, Lifelines, etc.:— 600 ft. off gangway between T. 10 Bridge, between bridge of pump over & pump over to 100 ft. The gangway of structure are two balled 3" 4 high with 5/8 galv iron chain with 2 turnbuckles. Turnbuckles spaced 10' 0" apart. Turnbuckle top 12' 0" from neck of keel to channel of 600 ft. off gangway.

FORE & AFT BRACING TWO IN EACH WELL
DIAGONALS 2 1/2 x 2 1/2 x 12' ANGLES
CENTRE GUSSET 18" x 16" x 5/16" PLATE
TOP & BOTTOM BRACKETS 12" x 14" x 1/4"

FORE & AFT SIDE CHAINS 5 1/2 x 3 1/2 x 12' x 12'
BEAMS 6\"/>

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		<i>open rails & staunches</i>				
Forward Well		<i>open rails & staunches</i>				
State position of each freeing port { After Well :— ✓ (F. and A. position and height above deck edge) { Forward Well :— ✓ State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such :— ✓ Additional area where sheer is less than standard. ✓						

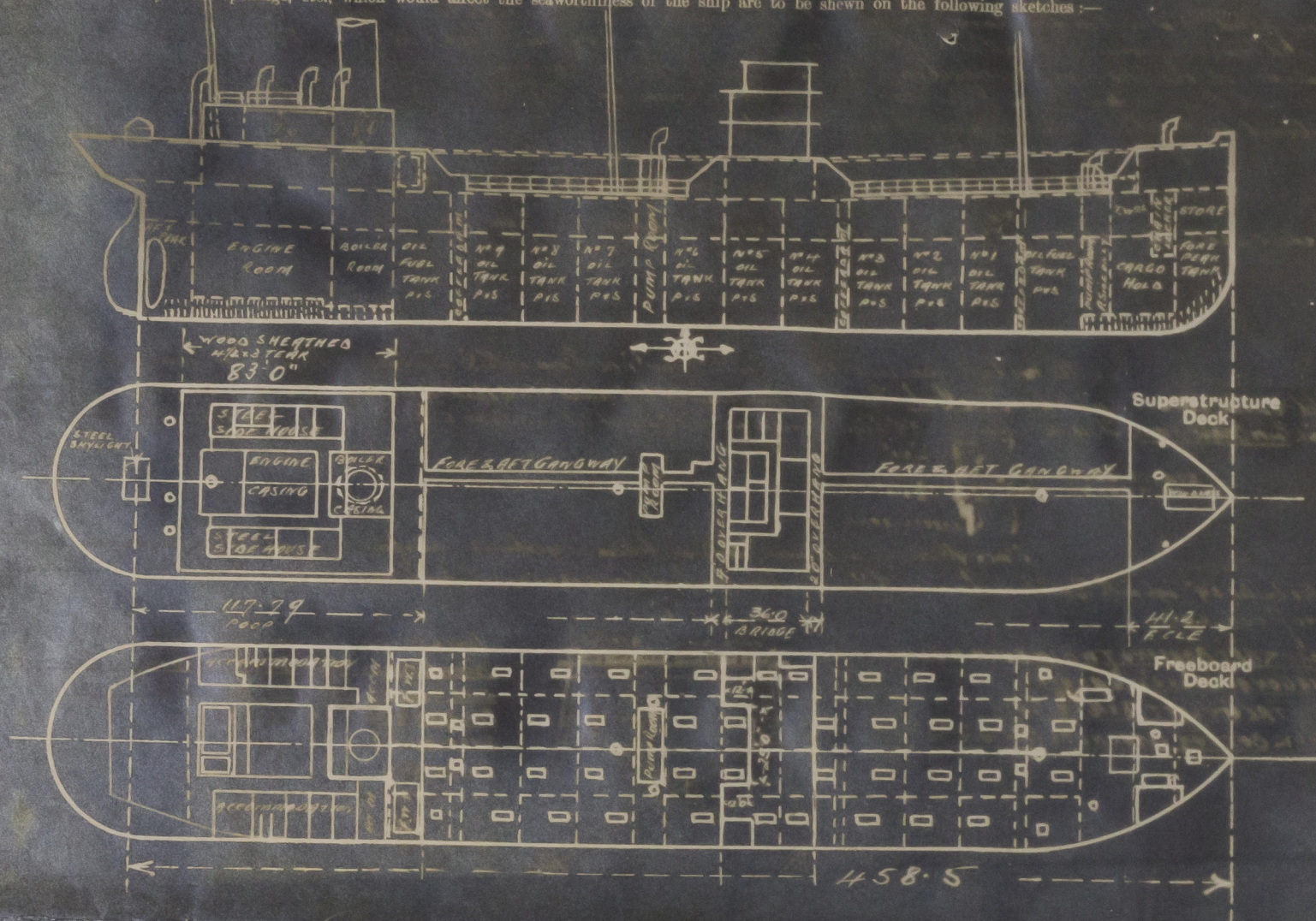
Particulars of Superstructures, Trunks, Casings, Deckhouses.

	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead	42	42	ONLY 3 ANGLES 9 1/2 x 3 1/2 x 5	30"	TOP BRACKETS 20" x 12 1/2" BARGE SILL	ONLY 4' 6" x 3' 6"	30"	8' 0"
Raised Quarter Deck Bulkhead ...	✓	✓	✓	✓	✓	✓	✓	✓
Bridge, After Bulkhead	34	34	4 1/2 x 3 3/8 L ONLY 3 ANGLES	38"	TOP BRACKETS 26 1/2 x 17 1/2" BARGE SILL 20" x 12 1/2" BARGE SILL	7' 0" 5' 0" x 3' 6"	20"	8' 0"
Bridge, Forward Bulkhead	50	42	9 1/2 x 3 1/2 x 5	36"	TOP BRACKETS 25 1/2 x 17 1/2" BARGE SILL 20" x 12 1/2" BARGE SILL	7' 0" 2' 6" x 5' 6"	24"	8' 0"
Forecastle Bulkhead SIDE HUNGES ...	37 1/2	37 1/2	3' x 3' x 3/8 L	36"	TOP BRACKETS 21" x 26 1/2"	OPEN 9' 0" EACH SIDE OF CENTRE	✓	8' 0"
Trunk, Aft	✓	✓	✓	✓	✓	✓	✓	✓
Trunk, Forward	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Free- board or Raised Quarter Decks ...	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Super- structure Decks BULKHEAD ...	38	34	5' x 3' x 3/8 L	36"	LARGE BRACKETS 60" x 66"	STEEL DOORS 27' x 60"	15'	8' 0"
Machinery Casings within Superstruc- tures not fitted with Class I Closing Appliances	38	34	5' x 3' x 3/8 L	36"	LARGE BRACKETS ON TOP 30" x 42"	STEEL DOORS 27' x 60"	15'	8' 0"
Deckhouses on Flush Deck Ships ...	✓	✓	✓	✓	✓	✓	✓	✓

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

Poop Bulkhead 1 opening ... 3" lifting boards in channels riveted to bulk; lock bolts thru steel portable plates
 Raised Quarter Deck Bulkhead ...
 Bridge, After Bulkhead 2 openings 3" lifting boards in channels riveted to bulk; lock bolts thru steel portable plates
 Bridge, Forward Bulkhead 2 openings 1/2 in. 1/2 in. S. doors can be opened from both sides
 Forecastle Bulkhead ... sides houses opening between 18" no closing appliances
 Exposed Machinery Casings on Free-board or Raised Quarter Decks ...
 Exposed Machinery Casings on Super-structure Decks 2 1/2 in. 2 1/2 in. ...
 Machinery Casings within Super-structures not fitted with Class I Closing Appliances ...
 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 shown on the following sketches:—



Vessel examined afloat

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

Builder's name and yard number *Salthgows Limited York No 820*

Names of sister ships *3/5 PULPIT POINT. 5/6 RPT No 6674. 3/5 YARRAVILLE. 5/6 RPT No 6689*

Owners *Standard Vacuum Lubrication Co. New York*

Fee £ *3-0* Received by me



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