

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Rpt 11334

Computation of Freeboard for Steamer, Sailing Ship, Tanker
having Poop, Bridge & Forecastle
(Type of Superstructures.)

Port of Survey Trieste

Date of Survey During construction

Name of Surveyor M. Miceli

Particulars of Classification *100 A1
CARRYING PETROLEUM IN BULK.

Ship's Name "SOLARIUM" Nationality and Port of Registry BRITISH LONDON Official Number 164704 Gross Tonnage Not Measured Date of Build 1936

Moulded Dimensions: Length 425.0 Breadth 54.25 Depth 31.0

Moulded displacement at moulded draught = 85 per cent. of moulded depth 468297.85

Coefficient of fineness for use with Tables 425.0 x 54.25 x 26.35 = 771

Depth for Freeboard (D) 31.00

Depth correction (a) Where D is greater than Table depth (D-Table depth) R = (31.06-28.33) x 3.00 = +8.19"

Round of Beam correction (b) Where D is less than Table depth (if allowed) (Table depth-D) R = ✓

Depth for Freeboard (D) = 31.06

If restricted by superstructures ✓

Moulded Breadth (B) 54.25

Standard Round of Beam = $\frac{B \times 12}{50} = \frac{54.25 \times 12}{50} = 13.02$

Ship's Round of Beam = 13.50

Difference Even 48"

Restricted to

Correction = $\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L}\right) = \frac{48^2}{4} \times \left(1 - \frac{S_1}{L}\right) = 4 \times 5803 = 23212$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed <u>agreed</u>	<u>89.31</u>	<u>89.31</u>	<u>7'-6"</u>	<u>✓</u>	<u>89.31</u>
" overhang ...	...	...	...	...	...
R.Q.D. enclosed	...	...	...	...	...
" overhang	...	...	...	...	...
Bridge enclosed <u>agreed</u>	<u>40.84</u>	<u>40.84</u>	<u>7'-6"</u>	<u>✓</u>	<u>40.84</u>
" overhang aft	...	...	...	...	...
" overhang forward	...	...	...	...	...
F'cle enclosed	<u>48.23</u>	<u>48.23</u>	<u>7'-6"</u>	<u>✓</u>	<u>48.23</u>
" overhang	...	...	...	...	...
Trunk aft	...	...	...	...	...
" forward	...	...	...	...	...
Tonnage opening aft	...	...	...	...	...
" forward	...	...	...	...	...
Total	<u>178.38</u>	<u>178.38</u>			<u>178.38</u>

Standard Height of Superstructure 7'-6"

" " R.Q.D. ✓

Deduction for complete superstructure 42"

Percentage covered $\frac{S}{L} = \frac{178.38}{425.0} = 41.97\%$

" " $\frac{S_1}{L} = 41.97\%$

" " $\frac{E}{L} = 41.97\%$

Percentage from Table, Line A Tanker 32.97%

(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" x 32.97 = -13.85"

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<u>52.50</u>	1		<u>52.50</u>	<u>53.60</u>	<u>53.60</u>	1		<u>53.60</u>
$\frac{1}{2}$ L from A.P. ...	<u>23.36</u>	4		<u>93.44</u>	<u>23.90</u>	<u>23.90</u>	4		<u>95.60</u>
$\frac{3}{4}$ L " ...	<u>5.77</u>	2		<u>11.54</u>	<u>6.18</u>	<u>6.18</u>	2		<u>12.36</u>
Amidships ...	<u>0</u>	4		<u>0</u>	<u>0</u>	<u>0</u>	4		<u>0</u>
$\frac{3}{4}$ L from F.P. ...	<u>11.55</u>	2		<u>23.10</u>	<u>12.00</u>	<u>12.00</u>	2		<u>24.00</u>
$\frac{1}{2}$ L " ...	<u>46.72</u>	4		<u>186.88</u>	<u>47.60</u>	<u>47.60</u>	4		<u>190.40</u>
F.P. ...	<u>105.00</u>	1		<u>105.00</u>	<u>108.30</u>	<u>108.30</u>	1		<u>108.30</u>
Total				<u>472.46</u>					<u>483.96</u>

Mean actual sheer aft = Even

Mean standard sheer aft = Even

Mean actual sheer forward = Even

Mean standard sheer forward = Even

Length of enclosed superstructure L forward of amidships = Tanker

" " aft of " = Tanker

Correction = $\frac{\text{Difference between sums of products}}{18} \left(75 - \frac{S}{2L}\right) = \frac{11.50}{18} \left(75 - \frac{178.38}{850}\right) = -0.347$

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 = 5.60

Moulded draught (d) = 25.46

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 6.36 = 6 1/4"

Addition for Winter North Atlantic Freeboard (if required) = 6 1/4 + 4 1/4 = 10 1/2"

Deduction for Fresh Water.

Displacement in salt water at summer load water line $\Delta = 13020$

Tons per inch immersion at summer load water line $T = 48$

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

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.771 + .68}{1.36} = 1.07$

Depth Correction ... 8.19

Deduction for superstructures ... 13.85

Sheer correction345

Round of Beam correction07

Correction for Thickness of Deck amidships ... 0

Other corrections, scantlings, etc. ... 0

Summer Freeboard = 67.38.17

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

Tropical Fresh Water Line above Centre of Disc	...	13"	Tropical Fresh Water Freeboard	...	5'-7 1/4"
Fresh Water Line	"	6 3/4"	Fresh Water	"	4'-6 1/4"
Tropical Line	"	6 1/4"	Tropical	"	5'-0 1/2"
Winter Line	"	6 1/4"	Winter	"	5'-1 1/2"
Winter North Atlantic Line	"	10 1/2"	Winter North Atlantic	"	6'-5 3/4"

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS

Description of Hatchway	ON FREEBOARD DECK 24 OFF WING AND CENTRE TANKS SETTLING TANKS	ON FREEBOARD DECK 10 OFF COFFERS AND BUNKERS AND SETTLING TANKS	ON FREEBOARD DECK WITHIN FOLE TO FOREPEAK	ON FOLE DECK 1 OFF TO FOREPEAK	ON FOLE DECK 1 OFF TO HOLD	ON POOP DECK 1 OFF TO POOP SP.	DECK 1 OFF TO ROPE LOCKER
Dimensions of Hatchway	4'-0" x 3'-0"	1'-6" x 1'-11" OVAL	2'-7" x 2'-4"	2'-6" x 2'-6"	9'-0" x 9'-11"	2'-3 1/2" x 2'-3 1/2"	1'-3" round
COAMINGS	Height above Deck ... 31"	10"	7"	6 3/4"	28"	9"	6"
Thickness	.40	.40	Bull A.	Bull A.	.44	Bull A.	Bull A.
Sides	.40	CHANNEL 1/2 x 3/4 x 5/8	7 x 3 x 3/2	9 x 3 1/2 x 4 1/4	.44	9 x 3 1/2 x 4 1/4	6 x 3 x 3/2
Stiffeners	---	---	---	---	---	---	---
Brackets, Stays	---	---	---	---	---	---	---
HATCH BEAMS	Number ...	---	---	---	---	---	---
Spacing ...	---	---	---	---	---	---	---
Scantling and Sketch	---	---	---	---	---	---	---
Bearing Surface	---	---	---	---	---	---	---
FORE AND AFTERS	Number ...	---	---	---	---	---	---
Spacing ...	---	---	---	---	---	---	---
Unsupported Lengths	---	---	---	---	---	---	---
Scantling* and Sketch	---	---	---	---	---	---	---
Bearing Surface	---	---	---	---	---	---	---
HATCH COVERS	Material ...	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
Thickness ...	.50	.48	.50	.50	.50	.50	.50
How fitted	HINGED	BOLTED	HINGED	HINGED	WITH STIFFENERS HINGED	HINGED	3 @ 7/8 BOLTS
Bearing Surface	HEMP PACKING	PACKING	HEMP PACKING	HEMP PACKING	HEMP PACKING	HEMP PACKING	HEMP PACKING
Spacing of Plates FASTENINGS	14"	4"	15 1/2"	15 1/2"	15"	15"	18"
Number of Tarpaulins	---	---	---	---	---	---	---
*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:— Fiddle casing over machinery space 9'-7" above Poop Deck (8'-0" between Poop & Boat Deck and 1'-7" above Boat Deck); and over auxiliary boiler space 8'-4" above Poop Deck (For scantlings see under exposed machinery casing on superstructure decks). On the fiddle top over motor space there is a portable steel skylight 36" x 23 1/2" feet strongly built and secured by 3/4" through bolts spaced 6" apart to a coaming 5 1/2" high & connecting angle 2 1/2" x 3/4". Over auxiliary boiler space there are two gratings 4'-0" x 11'-9" and one 1'-0" x 4'-6" fitted with hinged polished plate covers. The funnel is .30" thick, substantially constructed and stepped directly on fiddle top.

Particulars of Flush Bunker Scuttles:—

NONE

Particulars of Companionways:—

On Poop Deck aft a companionway leading to Poop Space: 6'-9" x 2'-0", plating .24; stiffeners 3 x 2 1/2 A. 28 @ 2 1/2" W. T. Sash (Port) steel, hinged 5 1/2" x 2'-0"; sill 13" — secured by clips capable of being opened from both sides.

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

No	POSITION	HEIGHT	DIAM	THICKNESS	LEADS TO	MEANS OF CLOSING	REMARKS
1-4	ON FREEBOARD	16'-6"	24"	.40	PUMP ROOMS	DAMPER	SUPPORTED AT PUMP ROOM ENTRANCE BARS
5	ON FOLE DECK	36"	12"	.34	FORE PEAK SPACES	PORTABLE HUSKHOODS WITH RUBBER PACKING	
6	"	36"	10"	.32	ACCOM. SP. IN FOLE	Bells	
7-13	"	36"	6"	.30	"	Bells	
14-23	"	36"	5"	.44	W.C. WASH. PLACES & LOCKERS IN FOLE	Canvas Hoods	GOOSENECK VENT. (CASTINGS)
24	"	36"	10"	.32	HOLD PORT.	PORTABLE HUSKHOODS WITH RUBBER PACKING	
25	"	36"	10"	.32	" STB.	Bells	
26-27	"	36"	10"	.32	TWEEN DECK	Bells	
28	"	36"	10"	.32	FRD PUMP ROOM	Bells	
29-36	" BRIDGE DECK	30"	6"	.32	STORES & CARPENTER SHOP IN BRIDGE SP.	Bells	
37	"	36"	5"	.44	PAINT & LAMP ROOM IN BRIDGE SP.	Canvas Hoods	GOOSENECK VENT. (CASTING)
38-39	" POOP DECK	10'-6"	12"	.34	ENGINE STORES	PORTABLE HUSKHOODS WITH RUBBER PACKING	SUPPORTED AT BOAT DECK
40-43	"	10'-6"	8"	.30	PASSAGEWAYS IN POOP SP.	Bells	
44	"	10'-6"	10"	.32	1 PETTO	Bells	
45-46	"	33"	12"	.34	STEERING GEAR SPACE	Bells	
47	"	33"	12"	.34	STORES IN TWEEN DECK	Bells	
48-49	"	33"	6"	.30	HOSPITAL	Bells	
50	"	33"	6"	.30	STORES IN POOP SP.	Bells	
51	"	10'-6"	12"	.34	REFRIG. MACH. SP.	Bells	SUPPORTED AT BOAT DECK
52-56	"	36"	5"	.44	W.C. & WASH PL. IN AOP	Canvas Hoods	GOOSENECK VENT. (CASTINGS)
57-58	ON BOAT DECK	30"	8"	.30	PASSAGEWAY IN POOP SPACE	PORTABLE HUSKHOODS WITH RUBBER PACKING	
59-60	ON BOILER CASING TOP	47"	18"	.40	AUX. BOILER SP.	V	
61	"	47"	18"	.40	MOTOR SP.	V	
62	"	30"	12"	.34	REFRIG. MACH. SP.	V	
63-64	ON MOTOR CASING TOP	52 1/2"	24"	.40	MOTOR SPACE	V	
65	"	60"	18"	.40	"	V	
66	"	47"	18"	.40	"	V	
67-70	"	30"	14"	.36	ACCOM. IN POOP SP.	PORTABLE HUSKHOODS WITH RUBBER PACKING	
71-72	"	30"	12"	.34	ENG. WORK SHOP	V	

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

On freeboard Deck:— 4 off, 4" diam. to Fore & after Cofferdams & oil fuel Bunkers, height of open. 4'-6" above Deck.
 On Fole Deck:— 2 off, 3" " to Fore peak tank & Fresh water Tanks " " " 32" " "
 4 off, 3 1/2" " to Deep Tank " " " 32" " "
 On Poop Deck:— 4 off, 3" " to A.P. Tank; A.P. Space & Fresh water tanks " " " 25 1/2" " "
 all above air pipes substantially constructed and provided with hinged lid closings.
 Air pipes from Centre & wing cargo Tanks substantially constructed & carried up to Fore & Main Mast.

Particulars of Gangway Cargo and Coaling Ports:—

NONE



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Name of Ship SOLARIO

Freeboard Report Examined

(Date) 15 May 1957

Signed [Signature]

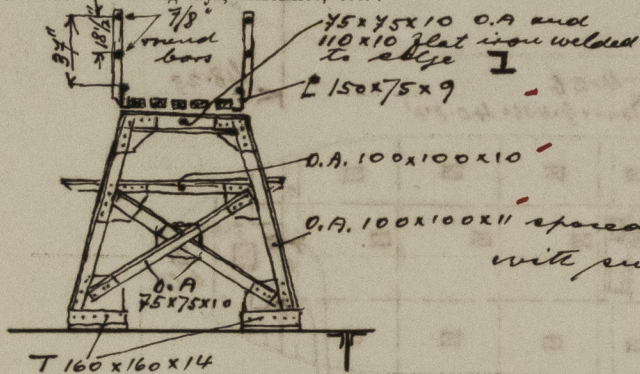
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Particulars of Scuppers and Sanitary Discharge Pipes:— No discharges from spaces below freeboard deck lead through ship sides! All scuppers and sanitary discharge pipes from fore space provided with automatic non return valves on the ship sides. Bridge space drained above freeboard deck by means of 2 holes at bottom of after End Bhead, provided with non-detachable plugs. All scuppers and sanitary discharge pipes from bridge space (except scupper from Refrig. sp.) provided with automatic non return valves on the ship sides and additional sluice valves fitted in accessible positions; scupper from Refrig. space provided with automatic non return valve on the ship side and non-detachable screwed plug at inner end. All pipes of steel and valve chests of cast steel!

Particulars of Side Scuttles:— No side scuttles below freeboard deck! On Fore & Bridge sides 8" diameter and on Poop sides 8" x 10" diameter brass framed sidelights with screw down hinged deadlights.

Particulars of Guard Rails:— On freeboard deck: height 3'-6" - 3 rails spaced 13" apart, stanchions spaced about 4 feet apart. Partial bulwark as shown below and on sketch. On superstructure decks: height 3'-6" - 3 rails spaced 13" apart, stanchions spaced about 4 feet apart. All guard rails substantially constructed!

Particulars of Gangways, Lifelines, etc.:



The gangway is fitted at the level of the superstructure decks between Fore & Bridge and Bridge and Poop.

Particulars of Freeing Arrangements.

	Length of Bulwark WELL	Height of Bulwark (PARTIAL)	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well ...	131'-8"	3'-6"	3'-2" x 1'-8" oval AND 6'-6" open rails	THREE	3 x 4.6 = 13'8"	Open rails half length
Forward Well ...	115'-10"	3'-6"	3'-2" x 1'-8" oval AND 52'-10" open rails	TWO	2 x 4.6 = 9'2"	" "

State position of each freeing port ... { After Well:— } See sketch
(F. and A. position and height above deck edge) { Forward Well:— } Lower edge of freeing ports 13" above deck
State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— Freeing ports fitted with 3 vertical rails 1" diam spaced 9" apart.
Additional area where sheer is less than standard. ✓ open rails as above +)

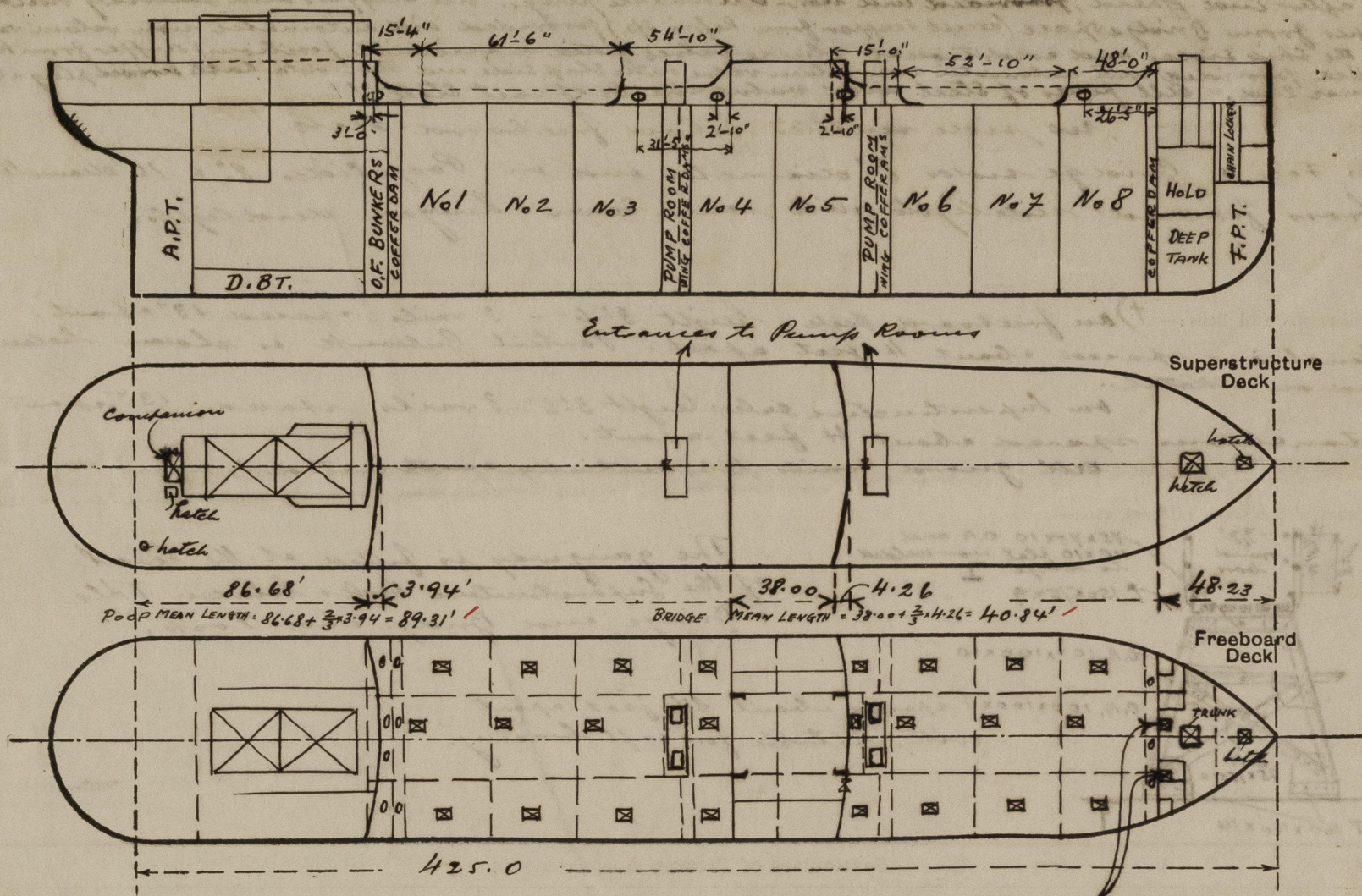
Particulars of Superstructures, Trunks, Casings, Deckhouses.

	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead ...	T Bar 6'4" x 6'4" x .55	.46	B.A. 9 x 3 1/2 x 48 AND 2 FORECAST BREADS	30"	Riveted to beam at top bracketed at bottom	2 OFF 51" x 30"	24"	
Raised Quarter Deck Bulkhead ...								
Bridge, After Bulkhead ...	T Bar 6'4" x 6'4" x .55	.30	B.A. 4 1/2 x 3 x 32 AND 2 FORECAST BREADS T 2 WEBS	27"-30"	Nil	1 OFF 51 1/2 x 24" 2 OFF 51" x 37 1/2"	24"	
Bridge, Forward Bulkhead ...	T Bar 6'4" x 6'4" x .55	.44	B.A. 9 x 3 1/2 x 48 AND 2 FORECAST BREADS	30"-35"	Riveted to beam at top bracketed at bottom	1 OFF 60" x 30"	19"	
Forecastle Bulkhead ...	T Bar 6'4" x 6'4" x .55 Plate 28" x 36"	.30	B.A. 4 1/2 x 3 x 34 AND 9 BREADS	30"	Nil	8 OFF 51 1/2 x 24" 1 OFF 54 1/2 x 30" 1 OFF 51" x 30"	24" 25" 25"	
Trunk, Aft ...								
Trunk, Forward ...								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...								
Exposed Machinery Casings on Superstructure Decks ...	Plate 12" x 34"	.30	B.A. 4 1/2 x 2 1/2 x 28	26 1/2"	Bracketed at top & continues at bottom	None	✓	9'4" ABOVE POOP DK 8'6" POOP-BOAT DK 1'-7" ABOVE BENT DK
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...								
Deckhouses on Freeboard Deck (1 FWD & 1 AFT) PUMP ROOM ENTRANCES	Plate 18" x 38" Deck 9'3 1/2 x 3 1/2 x .44	.32	B.A. 4 1/2 x 2 1/2 x 28	20 1/2"-24"	Bracketed at top free at bottom	1 OFF 57" x 32 1/2"	18"	7'-6"

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

Poop Bulkhead ...	2 W.T. hinged steel doors secured by clips capable of being operated from both sides.
Raised Quarter Deck Bulkhead ...	
Bridge, After Bulkhead ...	1 W.T. hinged steel door secured by clips capable of being operated from both sides. 2 portable steel plates secured by hook bolts spaced 14" apart.
Bridge, Forward Bulkhead ...	1 W.T. hinged steel door, secured by clips capable of being operated from both sides.
Forecastle Bulkhead ...	8 hinged steel doors 1 1/2" thick provided with ordinary locks capable of being operated from both sides.
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	2 W.T. hinged steel doors (1 leading to tweendeck & 1 to Pump Room) secured by clips operated from both sides (See sketch).
Exposed Machinery Casings on Superstructure Decks ...	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ...	No openings.
Deckhouses on Freeboard Deck (1 FWD & 1 AFT) PUMP ROOM ENTRANCES	in after Bhead: 1 W.T. hinged steel door secured by clips capable of being operated from both sides.

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:—



Access to tween-deck (Port) and to Pump Room (Stb) gained through stairways arranged within the Tole and substantially steel sheathed. Openings in Tole 13' head $54\frac{1}{2}'' \times 30''$ & $51'' \times 30''$, sill 25" closed by W.T. hinged steel doors, secured by clips capable of being operated from both sides.

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

Tanker with Transverse Side framing and longitudinal framing at bottom and Deck; two longitudinal girders and single deck in way of oil Tanks. Cruiser stern.

Builder's name and yard number CANTIERI RIUNITI DELL' ADRIATICO YARD No 1136

Names of sister ships

Owners ANGLO SAXON PETROLEUM Co. LD.

Fee £ Received by me

to be applied on completion of vessel



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