

Lloyd's Register of Shipping.
SURVEYS FOR FREEBOARD.

17 JUN 1933

Computation of Freeboard for Steamer, Sailing Ship, Tanker
having *a Shelldeck with tonnage opening*
Poop, Bridge and Forecastle
(Type of Superstructures.)

Ship's Name <i>M. S. MANDERAN</i>	Nationality and Port of Registry <i>Dutch</i> <i>AMSTERDAM</i>	Official Number	Gross Tonnage <i>16226</i>	Date of Build <i>1922</i> <i>10 mo</i>	Port of Survey <i>Amsterdam</i>
Moulded Dimensions: Length <i>151.689</i> Breadth <i>18.288</i> Depth <i>9.241</i> <i>m</i> To MAIN DECK Moulded displacement at moulded draught = 85 per cent. of moulded depth Coefficient of fineness for use with Tables <i>742</i>					Date of Survey <i>15 June 1933</i>
					Name of Surveyor <i>H. P. J. Jansen</i>
					Particulars of Classification <i>4-100 A1</i> <i>with freeboard.</i>

Depth for Freeboard (D) <i>m</i>	Depth correction	Round of Beam correction <i>m</i>
Moulded depth ... <i>9.241</i>	(a) Where D is greater than Table depth (D - Table depth) R = <i>✓</i>	Moulded Breadth (B) <i>18.288</i>
Stringer plate ... <i>12</i>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <i>8.33 (10.113 - 9.283) 30.00</i> <i>- 207</i>	Standard Round of Beam = $\frac{B \times 12}{50} = 366$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ <i>✓</i>	If restricted by superstructures <i>✓</i>	Ship's Round of Beam = <i>368</i>
Depth for Freeboard (D) = <i>9.283</i>		Difference <i>2</i> excess
		Restricted to
		Correction = $\frac{\text{Diff}^e}{4} \times \left(1 - \frac{S_1}{L} \right) = \frac{2}{4} \times .0055 = \text{NIL}$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S)	Height <i>m</i>	Height Correction	Effective Length (E)	
Poop enclosed ...	<i>26.464</i>	<i>26.47</i>	<i>3.010</i>	<i>✓</i>	<i>26.47</i>	Standard Height of Superstructure <i>2290</i>
„ overhang ...	<i>.965</i>	<i>.48</i>	<i>✓</i>		<i>.48</i>	„ „ R.Q.D. <i>✓</i>
R.Q.D. enclosed ...						Deduction for complete superstructure <i>1067</i>
„ overhang ...						Percentage covered $\frac{S}{L} = 100\%$
Bridge enclosed ...						„ „ $\frac{S_1}{L} = 99.45\%$
„ overhang aft ...	<i>123.012</i>	<i>123.01</i>	<i>3.010</i>	<i>✓</i>	<i>123.01</i>	„ „ $\frac{E}{L} = 99.45\%$ <i>✓</i>
„ overhang forward ...						Percentage from Table, Line A. <i>99.32%</i>
F'cle enclosed ...						(corrected for absence of forecastle (if required))
„ overhang ...						Percentage from Table, Line B.
Trunk aft ...						(corrected for absence of forecastle (if required))
„ forward ...	<i>12.45</i>	<i>.86</i>	<i>3.010</i>	<i>1</i>	<i>.86</i>	Interpolation for bridge less than 2L (if required) <i>✓</i>
Tonnage opening aft ...	<i>22.10</i>					- Deduction = <i>1067</i> x <i>.9932</i> = <i>-1060</i>
„ „ forward ...						
Total ...	<i>151.689</i>	<i>150.82</i>			<i>150.82</i>	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate <i>+720</i>	Effective Ordinate	S	M	Product	
A.P. ...	<i>1517</i>	<i>1</i>	<i>1517</i>	<i>1626</i>	<i>2346</i>	<i>1</i>	<i>2346</i>	<i>✓</i>		Mean actual sheer aft = <i>Excess</i>
$\frac{1}{4}$ L from A.P. ...	<i>674</i>	<i>4</i>	<i>2696</i>	<i>470</i>	<i>1042</i>	<i>4</i>	<i>4168</i>	<i>✓</i>		Mean actual sheer forward = <i>Excess</i>
$\frac{3}{8}$ L „ ...	<i>168</i>	<i>2</i>	<i>336</i>	<i>0</i>	<i>260</i>	<i>2</i>	<i>520</i>	<i>✓</i>		Mean standard sheer forward
Amidships ...	<i>✓</i>	<i>4</i>	<i>✓</i>	<i>0</i>	<i>✓</i>	<i>4</i>	<i>✓</i>	<i>✓</i>		Length of enclosed superstructure forward of amidships =
$\frac{3}{8}$ L from F.P. ...	<i>337</i>	<i>2</i>	<i>674</i>	<i>0</i>	<i>506</i>	<i>2</i>	<i>1012</i>	<i>✓</i>		„ „ aft of „ = <i>C.S.S.</i>
$\frac{1}{4}$ L „ ...	<i>1348</i>	<i>4</i>	<i>5392</i>	<i>1499</i>	<i>2024</i>	<i>4</i>	<i>8096</i>	<i>✓</i>		
F.P. ...	<i>3035</i>	<i>1</i>	<i>3035</i>	<i>3835</i>	<i>4555</i>	<i>1</i>	<i>4555</i>	<i>✓</i>		
Total ...	<i>13653</i>		<i>13650</i>	<i>+720</i>			<i>20697</i>	<i>✓</i>		

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{7047}{18} (.72 - .50) = -98\%$
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.	Deduction for Fresh Water.	TABULAR FREEBOARD corrected for Flush Deck (if required)
Addition for Winter and Winter North Atlantic Freeboard.	Displacement in salt water at summer load water line	Correction for coefficient $\frac{742+65}{1.30} = \frac{1422}{1360}$
Depth to Freeboard Deck = <i>9.283</i>	$\Delta = 166.44$	Depth Correction ... <i>207</i>
Summer freeboard = <i>1340</i>	Tons per inch immersion at summer load water line	Deduction for superstructures ... <i>1060</i>
Moulded draught (d) = <i>7.943</i>	T = <i>58.08</i>	Sheer correction ... <i>98</i>
Deduction for Tropical freeboard and addition for	Deduction = $\frac{\Delta}{40T}$ inches	Round of Beam correction ...
Winter freeboard = $\frac{d}{4}$ inches = <i>16.5</i> = <i>17</i> cms	= <i>7.16</i>	Correction for Thickness of Deck amidships ...
Addition for Winter North Atlantic Freeboard (if required) = <i>✓</i>	= <i>18</i> cms.	Other corrections, scantlings, etc. ...
		Summer Freeboard = <i>1335</i>

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

Tropical Fresh Water Line above Centre of Disc ...	<i>35</i> cms	Tropical Fresh Water Freeboard ...	<i>116</i>
Fresh Water Line „ „ ...	<i>18</i>	Fresh Water „ „ ...	<i>117</i>
Tropical Line „ „ ...	<i>17</i>	Tropical „ „ ...	<i>151</i>
Winter Line below „ „ ...	<i>17</i>	Winter „ „ ...	
Winter North Atlantic Line „ „ ...	<i>✓</i>	Winter North Atlantic „ „ ...	

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS										
ON FREEBOARD DECK										
ON SHELTER DECK										
Description of Hatchway	N°1	N°2	N°3	N°4	N°5	N°6	N°7	N°8	N°9	N°10
Dimensions of Hatchway	33-9	36-3	44-6	44-6	31-5	29-3	31-5	22-0	14-6	24-0
COAMINGS										
Height above Deck	9	9	9	9	9	30	30	30	30	30
Thickness	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Stiffeners	9 x 3 1/2 x 40	9 x 3 1/2 x 50	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40	9 x 3 1/2 x 40
Brackets, Stays	none	none	none	none	none	none	none	none	none	none
HATCH BEAMS										
Number	6	4	2	2	6	5	6	2	2	2
Spacing	4-9 7/8	4-6 3/8	4-10	4-10	4-5 7/8	4-10 1/2	4-5 7/8	4-10	4-10	4-10
Scantling and Sketch	4 1/2 x 3 x 44	3 x 3 x 40	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44	4 1/2 x 3 x 44
Bearing Surface	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
FORE AND AFTERS										
Number										
Spacing										
Unsupported Lengths										
Scantling and Sketch										
Bearing Surface										
HATCH COVERS										
Material	pine	pine	pine	pine	pine	pine	pine	pine	pine	pine
Thickness	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4
How fitted	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal	longitudinal
Bearing Surface	3	3	3	3	3	3	3	3	3	3
Spacing of Cleats	24	24	24	24	24	24	24	24	24	24
Number of Tarpaulins	two	two	two	two	two	two	two	two	two	two

Particulars of fiddle, funnel and ventilator coamings:— Fiddle openings on casing top angle coamings provided with steel hinged covers. Motorroom skylight of steel strongly constructed. Fiddle and funnel ventilators in efficient condition.

Particulars of Flush Bunker Scuttles:— Bunker hatchways on shelterdeck 36" x 36" and 41" x 35" steel coamings 30" x 40" hatch 2 3/4" pine bearing surface 2 3/4"; cleats, battens, wedges, tarpaulins all fitted as required.

Particulars of Companionways:— On shelterdeck: to shelterdeck and shelterdeck. Built in motorroom casing, wood door 50" x 30" x 1 3/4" thick sills 20" closed and operated from both sides. On Fore castle deck: to tweendeck hatchway 44" x 32", coaming 19" x 32", hatch 2 3/4" bearing surface 2 3/4" cleats, battens, wedges, tarpaulins etc all fitted as required. Steel Comp. way on Poop deck to accom crew wood door 59" x 30" x 1 1/2" thick sills 10" closed and operated from both sides.

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:— On Shelterdeck to hold, tweendeck vent: 36" (36 x 22) diam x 44, 30 x 30 diam x 44, and 36" x (24-20-10-16 and 15 diam) x 40. On Poop deck ventilators 20" x 24" diam x 40 and 34" (20-15 and 10 diam) x 36. Motorroom ventilators to accommodation crew in Poop space 34" x 30 diam x 24. On Fore castle deck ventilators 34" x 30 diam x 44, and 30" (16 and 15 diam) x 40.

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:— On Shelterdeck air pipes to tanks 30" x 6" diam, 30" x 4" diam, 24" x 3" diam and 24" x 2 1/2" diam. On Poop deck air pipes to tanks 26" x 6" diam and 18" x 4" diam. On Fore castle deck air pipes to tanks 30" x 6" diam.

Particulars of Gangway Cargo and Coaling Ports:—

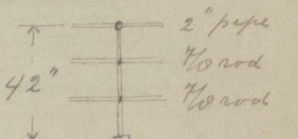
All ventilators are provided with wooden latches and canvas covers for closing the openings. All air pipes are provided with canvas covers for closing the openings.

Particulars of Scuppers and Sanitary Discharge Pipes:— Shelterdeck discharged through ship side by scupper pipes 4" diam and fitted with storm valve, when discharging through ship side below freeboard deck. Freeboard deck discharged through ship side by 4" scupper pipes, if in shelterdeck space and one in tonnage well on each side, below freeboard, storm valve fitted as required. All sanitary pipes led from spaces on shelterdeck discharged through ship side just above or below freeboard deck and are all provided with storm valve fitted in steel castings to shell.

Particulars of Side Scuttles:— No side scuttles to spaces below shelterdeck. Side scuttles to superstructure built on shelterdeck are fitted with portable deadlights stowed adjacent to the side scuttles.

Particulars of Guard Rails:— Openrail on Fore castle, and Poop deck. Bulwark on bridge deck house 42" high.

Particulars of Gangways, Lifelines, etc.:— not fitted.



Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
TONNAGE WELL	4-3	9-10 1/2	3' x 1.5'	1	4 1/2 ft²	
After Well on Shelterdeck	246-6	4'3"	9.45' x 1.9'	8	148 ft²	50 ft²
Forward Well on Shelterdeck	105-1"	51" to 39"	9.45' x 2.0' and 1.75'	4	88 ft²	21 ft²

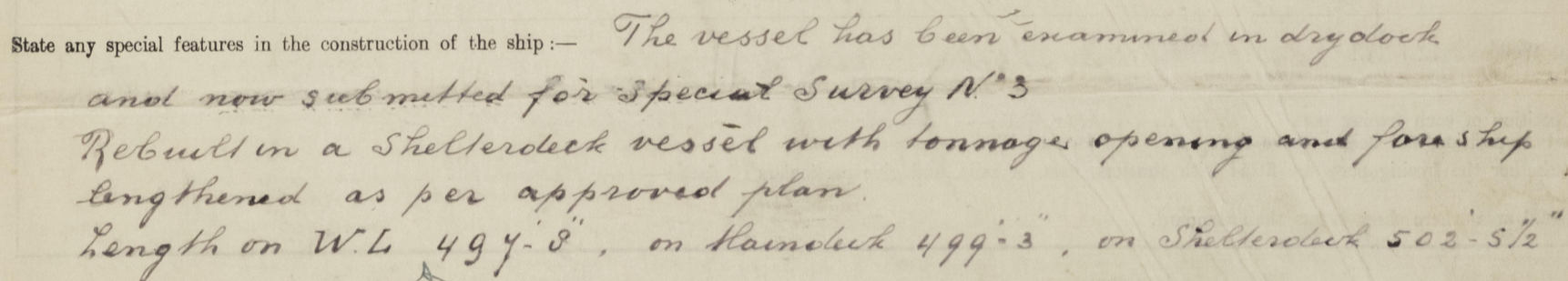
State position of each freeing port:— After Well:— height above shelterdeck edge 12" (F. and A. position and height above deck edge). Forward Well:— height above freeboard deck edge in tonnage well 16". State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— two tonnage well rods in freeing ports shelterdeck shutter fitted to freeing port tonnage well. 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	39 x 44	40	4 x 3 1/2 x 44	30	angle lugs only at bottom	54 x 25	18	7-9
Raised Quarter Deck Bulkhead								
Bridge, After Bulkhead	20	20	3 1/2 x 3 x 36	30	none	64 x 29	19	7-9
Bridge, Forward Bulkhead	35 x 44	36	5 1/2 x 3 x 40	30	brackets at top, bottom	65 x 30	10	7-9
Forecastle Bulkhead	26 x 32	20	3 x 3 x 20	36	none	60 x 46	10	7-9
Trunk, After Tonnage Well Bulkhead	32	32	6 x 3 x 30	30	none	40 x 36 1/2	23	9-10 1/2
Trunk, Forward Tonnage Well Bulkhead	30	30	4 x 3 x 32	30	none	49 x 36 1/2	23	9-10 1/2
Exposed Machinery Casings on Freeboard or Raised Quarter Decks								
Exposed Machinery Casings on Superstructure Decks	10 x 40	36	4 x 3 x 36	29	none	54 x 24	22	7-9
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	20	20	4 x 2 1/2 x 30	29	none	no openings		9-10 1/2
Deckhouses on Flush Deck Ships								

Particulars of Closing Appliances (state if capable of being manipulated from both sides).	
Poop Bulkhead on Shelterdeck	Ordinary steel hinged doors closed and operated from both sides
TONNAGE WELL	
Raised Quarter Deck Bulkheads	Portable steel plates fastened with hook bolts
Bridge, After Bulkhead	Ordinary 1 3/4" thick doors closed and operated from both sides
Bridge, Forward Bulkhead	W. T. steel hinged doors, manipulated from both sides
Forecastle Bulkhead on Shelterdeck	Portable steel plates fastened with hook bolts
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	
Exposed Machinery Casings on Superstructure Decks	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	Ordinary steel hinged doors, closed and operated from both sides
Deckhouses on Flush Deck Ships	no openings

Hand-drawn plan of the upper deck of the USS Monitor, showing various structural features and dimensions. The plan includes the following elements:

- Wood deck** $5\frac{1}{4}$ m/ft pine
- Pooped deck**
- Bulwark**
- FREEING ports**
- BRIDGE** $2\frac{1}{2}$ pine
- FREEING ports**
- TOW CASTLE DECK**
- SHELLED DECK**
- FREE FORWARD DECK**
- Dimensions:**
 - 2362 m/ft
 - 2565 m/ft
 - 3010
 - 43
 - $9-10\frac{1}{2} = 3010$ m/ft
 - 2362 m/ft
 - 51
 - 39
 - 3010 m/ft
 - $102-10 = 31344$ m/ft
 - $85-3 = 25904$ m/ft
- Labels:**
 - FREEING PORT LN
 - LONG AGS WELL
 - no sheer
 - no sheer



ALL = 2041 $\frac{m}{n}$
 $\frac{1}{6}$ from aft = 470 $\frac{m}{n}$
 $\frac{2}{6}$ from aft = 0
 Amidships = 0
 $\frac{2}{6}$ from fore = 0
 $\frac{1}{6}$ from fore = 1449 $\frac{m}{n}$
 F.P. = 3835 $\frac{m}{n}$

Fee \$ 1.94 : Received by me