

Estimated hubrid with reduced sheer and increased displacement due to hog.

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Index. No.
(For London Office only.)

34570

Ship's Name HAAKON HAAVAN	Official Number	Nationality and Port of Registry	Gross Tonnage	Date of Build	Port of Survey
Moulded Dimensions: Length 407 Breadth 56 Depth 33.5					Date of Survey 3.11.42
Moulded displacement at moulded draught = 85 per cent. of moulded depth 14648 tons					Surveyor's Signature
Coefficient of fineness for use with Tables .79					Particulars of Classification +100M <i>carrying petroleum in bulk</i>

Depth for Freeboard (D). Moulded depth ... 33.50 Stringer plate06 Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$ 33.56 Depth for Freeboard (D) = 33.56	Depth correction. (a) Where D is greater than Table depth (D-Table depth) R = (33.56 - 27.13) x 3 = +19.29 (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) 56 Standard Round of Beam = $\frac{B \times 12}{50} =$ 13.44 Ship's Round of Beam = 13.00 Difference .44 Restricted to ✓ Correction = $\frac{\text{Diff}^{\circ}}{4} \times \left(1 - \frac{S_1}{L} \right) =$ $\frac{.44}{4} \times .5914 = +.07$
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DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Poop enclosed ...	95.50	95.50	7.5	-	95.50
" overhang ...					
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...	40.00	40.00	7.5	-	40.00
" overhang aft ...					
" overhang forward ...					
F'cle enclosed <i>5 ft</i> ...	34.00	30.80	7.5	-	30.80
" overhang ...					
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" forward ...					
Total ...	169.50	166.30			166.30

Standard Height of Superstructure 7.5	R.Q.D.
Deduction for complete superstructure 42"	
Percentage covered $\frac{S}{L} =$ 41.64	
" $\frac{S_1}{L} =$ 40.86	
" $\frac{E}{L} =$ 40.86	
Percentage from Table, Line A. <i>Tanker</i> 31.86	
(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 31.86 = - 13.38	

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	50.70	1		50.70	41.50	41.50	1		41.50
$\frac{1}{4}$ L from A.P. ...	22.56	4		90.24	10.87	10.87	4		43.48
$\frac{2}{4}$ L " ...	5.58	2		11.16	0.63	0.63	2		1.26
Amidships ...	-	4		-	-	-	4		-
$\frac{2}{4}$ L from F.P. ...	11.16	2		22.32	9.67	9.67	2		19.34
$\frac{1}{4}$ L " ...	45.10	4		180.48	37.93	37.93	4		151.72
F.P. ...	101.40	1		101.40	102.00	102.00	1		102.00
Total ...				456.30					359.30

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) =$ **$\frac{97(.75 - .2082)}{18} = +2.92$**
If limited on account of midship superstructure. **✓**

Mean actual sheer aft = *Deficient*
Mean standard sheer aft =
Mean actual sheer forward = **.906**
Mean standard sheer forward =
Length of enclosed superstructure forward of amidships =
 " aft of " =
Sheer forward
 $\frac{11.16}{45.10} \times \frac{1}{3} = \frac{33.48}{135.30}$
 $\frac{101.40}{102.00} \times \frac{1}{1} = \frac{101.40}{102.00}$
 $\frac{9.67}{37.93} \times \frac{1}{3} = \frac{29.01}{113.79}$
 $\frac{270.18}{244.80}$
If limited to maximum allowance of 1½ ins. per 100 ft. **✓**

Deduction for Tropical Freeboard. Addition for Winter and Winter North Atlantic Freeboard. Depth to Freeboard Deck = 33.56 Summer freeboard = 6.52 Moulded draught (d) = 27.04 Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 6.78 = 6¾ Addition for Winter North Atlantic Freeboard (if required) = 6.78 + 4.07 = 10.85 = 10¾	Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta =$ 13824 Tons per inch immersion at summer load water line $T =$ 47.5 Deduction = $\frac{\Delta}{40T}$ inches = 7.28 = 7¼	TABULAR FREEBOARD <i>corrected for Flush Deck (if required)</i> Correction for coefficient $\frac{.79 + .68}{1.36} = \frac{1.47}{1.36}$ Depth Correction ... 19.29 Deduction for superstructures ... - 13.38 Sheer correction ... 2.92 Round of Beam correction07 Correction for Thickness of Deck amidships ... Other corrections, scantlings, etc. ... 22.28 13.38 +8.90 Summer Freeboard = 78.28
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SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:

Tropical Fresh Water Line above Centre of Disc ... 14" = 355	Tropical Fresh Water Freeboard ... 5'-6¼" = 1988
Fresh Water Line " " ... 7¼" = 184	Fresh Water " " ... 5'-4¼" = 1633
Tropical Line " " ... 6¾" = 171	Tropical " " ... 5'-4" = 1804
Winter Line below " " ... 6¾" = 171	Winter " " ... 5'-11½" = 1817
Winter North Atlantic Line " " ... 10¾" = 273	Winter North Atlantic " " ... 7'-5" = 2261

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