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Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

B.T. COPY.

Computation of Freeboard for Steamer, ~~Sailing Ship, Tanker~~
having shell deck with damage opening aft.

(Type of Superstructures.)

Ship's Name "TORNATOR"
"NORDLYS"

Nationality and Port of Registry Danish Copenhagen

Official Number 3718

Gross Tonnage 1916-6

Date of Build 1916-6

Port of Survey Copenhagen

Date of Survey 12-4-32 and subsequent dates.

Name of Surveyor S. Sanderson

Particulars of Classification 80100 A 1
shell dk. with freeboard.

Moulded Dimensions: Length 361'-8" Breadth 51'-3" Depth 26'-0"

Moulded displacement at moulded draught = 85 per cent. of moulded depth 9070 tons

Coefficient of fineness for use with Tables .7735

Depth for Freeboard (D)

Moulded depth 26'-0"

Stringer plate 46"
.04

Sheathing on exposed deck
 $T \left(\frac{L-S}{L} \right) =$

Depth for Freeboard (D) = 26.04

Depth correction

(a) Where D is greater than Table depth
(D - Table depth) R = $(26.04 - 24.11) 2781$
+5.37

(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) 51.25

Standard Round of Beam = $\frac{B \times 12}{50} =$ 12.3

Ship's Round of Beam = 12 1/2"

Difference

Restricted to

Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) =$ Nil.

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)
Roop enclosed ...	<u>14'-0"</u>	<u>14.00</u>	<u>8'-0"</u>		<u>14.00</u>
" overhang ...	<u>3'-58"</u>	<u>1.79</u>			<u>1.79</u>
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...	<u>304'-16"</u>	<u>304.16</u>	<u>8'-0"</u>		<u>304.16</u>
" overhang aft ...	<u>50"</u>	<u>.37</u>			<u>.37</u>
" overhang forward ...	<u>35'-54"</u>	<u>35.42</u>	<u>8'-0"</u>		<u>35.42</u>
Fore enclosed ...					
" overhang ...					
Trunk aft ...	<u>4'-0"</u>	<u>2.06</u>	<u>8'-0"</u>		<u>2.96</u>
" forward ...	<u>8'-4"</u>				
Tonnage opening aft ...					
" forward ...					
Total ...	<u>361.66</u>	<u>358.70</u>			<u>358.70</u>

Standard Height of Superstructure 7.12

" " R.Q.D. -

Deduction for complete superstructure 39.45

Percentage covered $\frac{S}{L} =$ 1.000

" " $\frac{S_1}{L} =$.9919

" " $\frac{E}{L} =$.9919

Percentage from Table, Line A. .9900

(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 = 39.45 \times .99 = 39.05

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<u>46.17</u>	1		<u>46.17</u>	<u>3'-8"</u>	<u>44.00</u>	1		<u>54.60</u>
1/4 L from A.P. ...	<u>20.54</u>	4		<u>82.16</u>	<u>1'-5"</u>	<u>17.77</u>	4		<u>88.20</u>
3/4 L " ...	<u>5.08</u>	2		<u>10.16</u>	<u>2 1/2"</u>	<u>4.44</u>	2		<u>11.02</u>
Amidships ...		4		<u>0</u>			4		
3/4 L from F.P. ...	<u>10.17</u>	2		<u>20.34</u>	<u>1'-1"</u>	<u>11.06</u>	2		<u>24.52</u>
1/4 L " ...	<u>41.08</u>	4		<u>164.32</u>	<u>3'-8"</u>	<u>44.24</u>	4		<u>196.20</u>
F.P. ...	<u>92.33</u>	1		<u>92.33</u>	<u>8'-1"</u>	<u>97.50</u>	1		<u>108.10</u>
Total ...	<u>53</u>			<u>415.48</u>		<u>410.6</u>			<u>482.64</u>

Mean actual sheer aft =

Mean standard sheer aft =

Mean actual sheer forward =

Mean standard sheer forward =

Length of enclosed superstructure forward of amidships =

L

" " aft of " =

Height of superstructure
Rule height
run

8'-0"
7'-1.40"
10'-60"

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) = \frac{67.16}{18} (.75 - .50) = -.93$

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 = 26.04

Summer freeboard = 2.46

Moulded draught (d) = 23.58

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 5.89

Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta =$ 9790

Tons per inch immersion at summer load water line

T = 37.5

Deduction = $\frac{\Delta}{40 T}$ inches

= 6.52

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient $\frac{.687.775}{1.76} = \frac{1.455}{1.76}$

	+	-
Depth Correction ...	<u>5.37</u>	
Deduction for superstructures ...		<u>39.05</u>
Sheer correction ...		<u>.93</u>
Round of Beam correction ...		
Correction for Thickness of Deck amidships ...		
Other corrections, scantlings, etc. ...		
	<u>5.37</u>	<u>39.98</u>

Summer Free

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

Tropical Fresh Water Line above Centre of Disc ...	<u>2.41</u>	<u>316</u>
Fresh Water Line " " ...	<u>6.52</u>	<u>166</u>
Tropical Line " " ...	<u>5.89</u>	<u>150</u>
Winter Line below " " ...	<u>5.89</u>	<u>150</u>
Winter North Atlantic Line " " ...		

Tropical Fresh Water Freeboard ...	<u>59.90</u>
Fresh Water " " ...	<u>64.08</u>
Tropical " " ...	
Winter " " ...	
Winter North Atlantic " " ...	

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PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS										
Fuelboard deck					Shelter deck					
Description of Hatchway	No. 1	No. 2	No. 3	No. 4	No. 5	No. 1	No. 2	No. 3	No. 4	No. 5
Dimensions of Hatchway	25'-0" x 18'-0"	27'-1" x 18'-0"	18'-9" x 18'-0"	27'-1" x 18'-0"	27'-1" x 18'-0"	25'-0" x 18'-0"	27'-1" x 18'-0"	18'-9" x 18'-0"	27'-1" x 18'-0"	27'-1" x 18'-0"
COAMINGS	Height above Deck	9 1/2"	52"	48"	52"	52"	48"	44"	48"	48"
	Thickness	50"	52"	48"	52"	52"	48"	44"	48"	48"
	Sides	50"	52"	48"	52"	52"	48"	44"	48"	48"
	Ends	50"	52"	48"	52"	52"	48"	44"	48"	48"
HATCH BEAMS	Stiffeners	none	none	none	none	7" B.A. stanchions spaced not more than 10'-0"	none	none	none	none
	Brackets, Stays	none	none	none	none	7" B.A. stanchions spaced not more than 10'-0"	none	none	none	none
	Number	4	5	3	5	4	4	3	4	4
	Spacing	5'-0"	4'-6"	4'-6"	4'-6"	5'-0"	4'-6"	4'-6"	4'-6"	4'-6"
FORE AND AFTERS	Scantling and Sketch	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'
	Bearing Surface	3"	3"	3"	3"	3"	3"	3"	3"	3"
	Number	4	5	3	5	4	4	3	4	4
	Spacing	5'-0"	4'-6"	4'-6"	4'-6"	5'-0"	4'-6"	4'-6"	4'-6"	4'-6"
HATCH COVERS	Unsupported Lengths	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"
	Scantling and Sketch	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'
	Bearing Surface	3"	3"	3"	3"	3"	3"	3"	3"	3"
	Number	4	5	3	5	4	4	3	4	4
HATCH COVERS	Thickness	3"	3"	3"	3"	3"	3"	3"	3"	3"
	How fitted	3"	3"	3"	3"	3"	3"	3"	3"	3"
	Bearing Surface	3"	3"	3"	3"	3"	3"	3"	3"	3"
	Number	4	5	3	5	4	4	3	4	4
HATCH COVERS	Spacing	5'-0"	4'-6"	4'-6"	4'-6"	5'-0"	4'-6"	4'-6"	4'-6"	4'-6"
	Unsupported Lengths	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"
	Scantling and Sketch	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'	4" x 3" x 40'
	Bearing Surface	3"	3"	3"	3"	3"	3"	3"	3"	3"
Spacing of Cleats	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
Number of Tarpaulins	2	2	2	2	2	2	2	2	2	2

*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 openings covered with strong hinged steel flats.
 Funnel made of 1/4" steel plates, no special coaming.
 4 ventilators to engine room 18" diam. with 8'-0" steel coaming 5/16" thick.
 Steel skylights to engine casing & galley made of 1/4" plate with hinged steel flats.
 Hatch to coal shoot 4' x 15' with 12 coaming 3/8" thick and 2 1/2" wood covers, tarpaulins, cleats, battens etc.

Particulars of Flush Bunker Scuttles:— none.

Particulars of Companionways:— 1 off in foredeck to crew quarters made of steel & riveted to the deck, fitted with hinged steel doors which can be manipulated from both sides, height of sill 13".
 1 off in afterdeck to poop space made of steel & riveted to the deck, fitted with hinged steel door which can be manipulated from both sides, height of sill 13".

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:—
 Shelter deck fwd:— 4 off 12" diam. 36" x 1/4" coaming.
 1 " 18" " 36" x 5/16" " "
 2 " 18" " 36" x 3/16" " "
 amidship:— 2 " 9" " 36" x 3/16" coaming
 1 " 12" " 36" x 1/4" " "
 1 " 18" " 36" x 5/16" " "

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—
 All air pipes extending 36" above the shelter deck. They are made of steel pipes with rubber-necks, wood plugs & canvas covers supplied for all air pipes.

Particulars of Cargo and Coaling Ports:— none.

Particulars of Scuppers and Sanitary Discharge Pipes

no scuppers or discharge pipes fitted to spaces below the fuelboard deck.
 3 1/2" scuppers made of steel pipes without storm valves fitted on the fuelboard deck leading thru the ship's sides, for no. 2 position please see sketch.

Particulars of Side Scuttles:

all side scuttles made of steel & fitted with strong hinged steel deadlights.

Particulars of Guard Rails:—

Shelter deck fwd of no. 1 hatch:— bulwark made of .30" x .36" steel plates with 7" x .40" B.A. stanchions spaced 4'-6" and 6" x 3" x .40" rail bar.

Shelter deck elsewhere:— rails made of steel rods (3 off equally spaced) height 3'-6" with steel stanchions spaced about 4'-0".

Particulars of Gangways, Lifelines, etc.:—

none fitted
 Arrangements made for fitting lifelines

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	8'-1"	8'-0"	36" x 25"	1	6 sq. ft.	
Forward Well						

State position of each freeing port (F. and A. position and height above deck edge) After Well:— fore end of well 15" above deck
 Forward Well:—
 State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— hinged steel shutters.
 Additional area where sheer is less than standard.

Particulars of Superstructures, Trunks, Casings, Deckhouses.

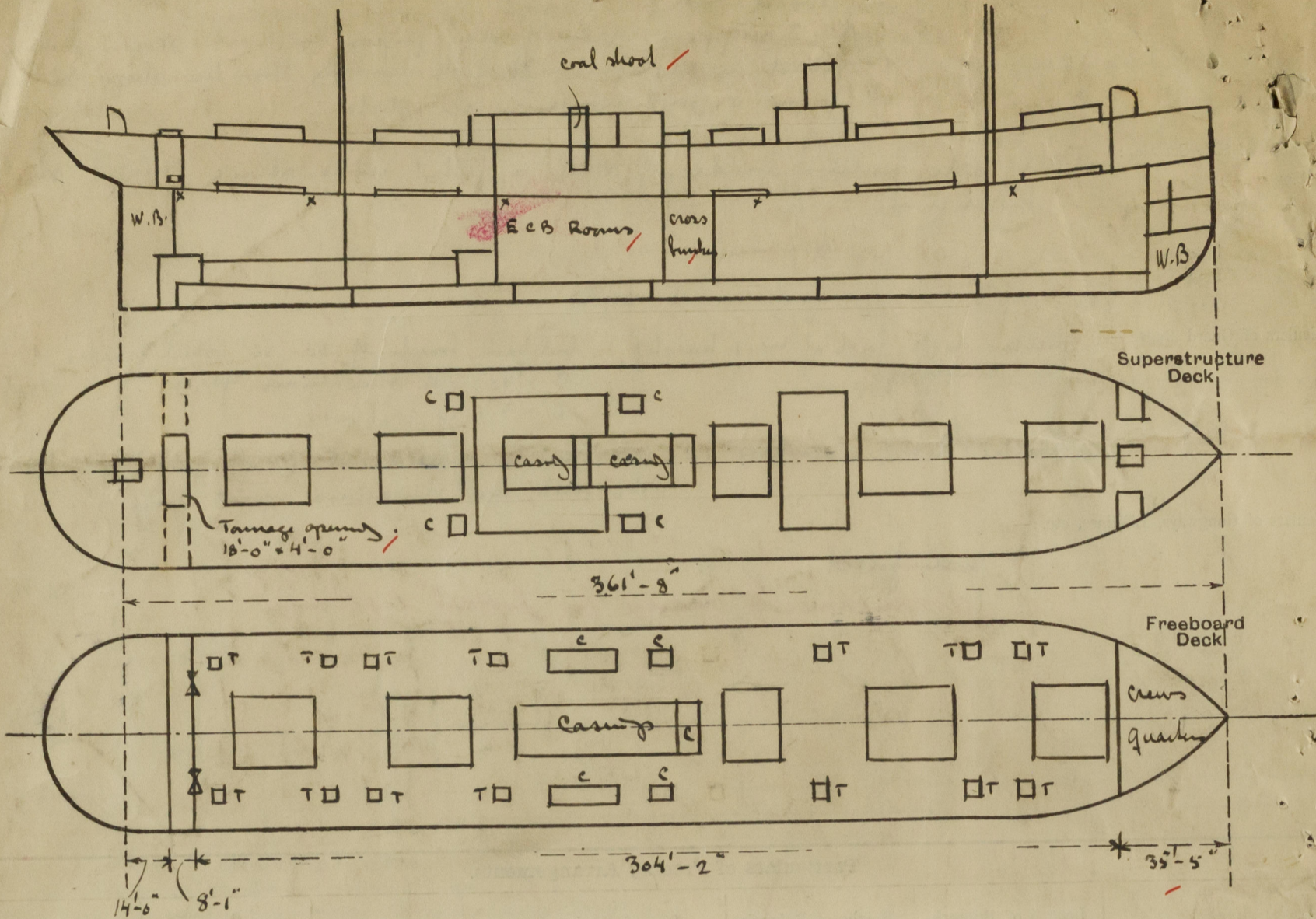
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead	5/16"	5/16"	5 x 3 x 7/16" X	30"	none	none	✓	✓
Raised Quarter Deck Bulkhead	✓	✓	✓	✓	✓	✓	✓	✓
Bridge, After Bulkhead	5/16"	5/16"	5 x 3 x 7/16" X	30"	none	2 off 8'-0" x 42"	0"	✓
Bridge, Forward Bulkhead	✓	✓	✓	✓	✓	✓	✓	✓
Forecastle Bulkhead	1/4"	1/4"	4 x 3 x 3/8" X	29"	none	none	✓	✓
Trunk, Aft	✓	✓	✓	✓	✓	✓	✓	✓
Trunk, Forward	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Freeboard or Raised Quarter Decks	✓	✓	✓	✓	✓	✓	✓	✓
Exposed Machinery Casings on Superstructure Decks	5/16"	5/16"	5 x 3 x 3/8" X	35"	none	1 off each side 5'-0" x 26"	16"	7'-3"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	3/8"	1/4"	3 x 3 x 5/16" X	27"	hatched top	1 off each side 5'-2" x 30"	13"	7'-3"
Deckhouses on Flush Deck Ships	✓	✓	✓	✓	✓	✓	✓	✓

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

Poop Bulkhead	✓
Raised Quarter Deck Bulkhead	✓
Bridge, After Bulkhead	2 1/2" storm boards in riveted channels for the full height.
Bridge, Forward Bulkhead	✓
Forecastle Bulkhead	✓
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	✓
Deckhouses on Flush Deck Ships	✓

Nordlys

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:—



T = Trimming hatch
C = coal hatch.
x = live deck scupper

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

Trimming hatches on freeboard deck:— 27" x 29" with 3" angle coaming & 3" wood covers; ~~no cleats or~~ ~~tarpsaulins & efficient~~ battening down arrangements ~~provided~~

Coal hatches on freeboard deck:— 1 off 16'-8" x 42 each side & 1 off 4'-2" x 30" each side. 9 1/2" bull. angle coaming, 3" wood covers, cleats spaced 36" & tarpsaulins, battening down arrangements etc. fitted

Coal hatches on superstructure deck:— hatch fwd of casing:— 5'-9" x 15'-0" Coaming 30" x 7/16" thick.

One shifted beam 11" x 4 1/2" x 5/16" I with 3" beams. 2 1/2" wood covers fitted longitudinally. 2 tarpsaulins, battens, cleats (24" spacing) etc. fitted.

Hatches in way of casing:— 5'-10" x 36" x 25" high with 7/16" coaming. 2 1/2" wood covers & 2 tarpsaulins, battens, cleats (24" spacing) etc. fitted.

Hatches abaft midship house:— 46" x 36" x 26" high with 3/8" coaming. 2 1/2" wood covers & 2 tarpsaulins, battens, cleats (24" spacing) etc. fitted.

Tarnage hatch on superstructure deck:— 9" B.A. coaming; covered with 2 1/2" wood covers efficiently secured.

Δ at 22.7V = 9070
TPI = 375
Δ at 23.58' = 9070 + 375 x 18
9740 mld
9790 full.

Builder's name and yard number. Burmeister & Wain, Copenhagen.

Names of sister ships

Owners. Apstorselsk. Norden (P. Brown, J. & Co.)

Fee 310.00

Received by me



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