

No.

# THE BRITISH CORPORATION FOR THE SURVEY AND REGISTRY OF SHIPPING.

Report No. 2125 No. in Register Book 3480Received at Head Office 29<sup>th</sup> March 1928

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the ~~Single Triple~~ ~~Coin Quadruple~~ Screw S/S TILAPA

Official No. 149670 Port of Registry Liverpool.Registered Owners Messrs Elders & Lyffers Ltd.31-32 Bow Street, Covent Garden, LondonEngines Built by Cammell Laird & Co., Ltd.at Birkenhead.Main Boilers Built by Cammell Laird & Co., Ltd.at Birkenhead.

Donkey " " ✓

at ✓

Date of Completion 14/3/28First Visit 16/4/26. Last Visit 15/3/28 Total Visits 134

The particulars of this Vessel are similar to those on  
the sister ship Casanova (See report book No 1787)  
unless otherwise stated in this book H.B.



## RECIPROCATING ENGINES.

Works No. *924* No. of Sets *One* Description *Inverted triple expansion. Surface condensing*

No. of Cylinders each Engine *Three* No. of Cranks *Three*

Diars. of Cylinders *27 1/2" - 46 1/2" - 78"* Stroke *54"*

Cubic feet in each L.P. Cylinder *149.3*

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cyl.? *Yes*

" " " each Receiver? *Yes*

Type of H.P. Valves, *Piston valve*

" 1st I.P. " *Andrew & Cameron (Box type)*

" 2nd I.P. " *✓*

" L.P. " *✓ Slide valve (Double ported)*

" Valve Gear *Sleathensons link motion*

" Condenser *Surface* Cooling Surface *3570* sq. ft.

Diameter of Piston Rods (plain part) *8 1/4"* Screwed part (bottom of thread) *5.18*

Material " *Ingot steel*

Diar. of Connecting Rods (smallest part) *7 1/4"* Material *Ingot steel*

" Crosshead Gudgeons *7 1/2"* Length of Bearing *7 3/4"* Material " "

No. of Crosshead Bolts (each) *4* Diar. over Thrd. *3 1/4"* Thrds. per inch *6"* Material " "

" Crank Pin " " *2* " *4 1/4"* " *6* " " "

" Main Bearings *6* Lengths *2 - 16", 2 - 16 3/4", 2 - 19"*

" Bolts in each *2* Diar. over Thread *4"* Threads per inch *6* Material *I. Steel.*

" Holding Down Bolts, each Engine *96* Diar. *1 3/8"* No. of Metal Chocks *96*

Are the Engines bolted to the Tank Top or to a Built Seat? *✓ 4 Bomer chocks Tank top.*

Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? *Yes*

If not, how are they fitted? *✓*

Connecting Rods, Forged by *Cammell Laird & Co. Ltd. Sheffield*

Piston " " *Do Do Do*

Crossheads, " " *Do Do Do*

Connecting Rods, Finished by *Do Do Birkenhead*

Piston " " *Do Do Do*

Crossheads, " " *Do Do Do*

Date of Harbour Trial *1<sup>st</sup> March 1928.*

" Trial Trip *15<sup>th</sup> March 1928*

Trials run at *Liverpool to Holyhead.*

Were the Engines tested to full power under Sea-going conditions? *Yes.*

If so, what was the L.H.P.? *4,600* Revols. per min. *88*

Pressure in 1st I.P. Receiver, *78* lbs., 2nd I.P., *18* lbs., Vacuum, *28.2* ins.

Speed on Trial *14.5*

If the Conditions on Trial were such that full power records were not obtained give the following estimated data:—

Builders' estimated L.H.P. *✓*

Estimated Speed *✓*

Revs. per min. *✓*



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## TURBINE ENGINES.

Works No. Type of Turbines

No. of H.P. Turbines No. of I.P. No. of L.P. No. of Stern

Are the Propeller Shafts driven direct by the Turbines or through Gearing?

Is Single or Double Reduction Gear employed?

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of H.P. Turbines at Full Power

S.H.P.

" " L.P. " "

" " L.P. " "

" " 1st Reduction Shaft

" " 2nd " "

" " Propeller Shaft

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial

Knots. Propeller Revs. per min.

S.H.P.

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

## TURBO-ELECTRIC MACHINERY. DESCRIPTION OF INSTALLATION.

No. of Turbo-Generating Sets Capacity of each

Type of Turbine employed

Description of Generators

No. of Motors driving Propeller Shafts

Are the Propeller Shafts driven direct by the Motors or through Gearing?

Is Single or Double Reduction Gear employed?

Description of Motors

Diam. of 1st Reduction Pinion

" 1st " Wheel

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Estimated Pressure per lineal inch

Revs. per min. of Generators at Full Power

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

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## TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

Are the Propeller Shafts driven direct by the Motors or through Gearing?

Is Single or Double Reduction Gear employed?

Description of Motors

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of Generators at Full Power

" Motors "

" " 1st Reduction Shaft

" " 2nd "

" " Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial

Knots. Propeller Revs. per min.

S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gears

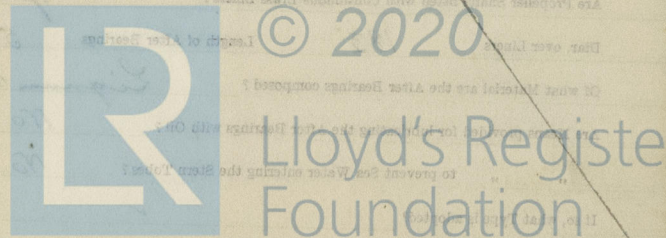
Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

## DESCRIPTION OF INSTALLATION.





## SHAFTING.

Are the Crank Shafts Built or Solid? *Built*

No. of Lengths in each *Three* Angle of Cranks *120°*

Diar. by Rule *15.33* Actual *16 7/8"* In Way of Webs *16 3/8"*

" of Crank Pins *16 1/8"* Length between Webs *17 1/4"*

Greatest Width of Crank Webs *31 1/4"* Thickness *10 1/4"*

Least " " *30 7/8"* " " *10 1/4"*

*DOWELS*  
Diar. of ~~Keys~~ in Crank Webs *Two 2' Dia.* Length *8"*

" Dowels in Crank Pins *One 2'* Length *7 1/4"* Screwed or Plain *Plain*

No. of Bolts each Coupling *6* Diar. at Mid Length *3 3/8"* Diar. of Pitch Circle *23 1/4"*

Greatest Distance from Edge of Main Bearing to Crank Web *1 1/2"*

Type of Thrust Blocks *Hitchell*

No. " Rings *One ahead and one astern*

Diar. of Thrust Shafts at bottom of Collars *16 7/8"* No. of Collars *One*

" " Forward Coupling *15 5/8"* At Aft Coupling *15 3/8"*

Diar. of Intermediate Shafting by Rule *14.56* Actual *15 3/8"* No. of Lengths *Five*

No. of Bolts, each Coupling *6* Diar. at Mid Length *3 3/8"* Diar. of Pitch Circle *23 1/4"*

Diar. of Propeller Shafts by Rule *16.02* Actual *16 7/8"* At Couplings *15 7/8"*

Are Propeller Shafts fitted with Continuous Brass Liners? *Yes*

Diar. over Liners *18 1/2"* Length of After Bearings *5'-9 1/2"*

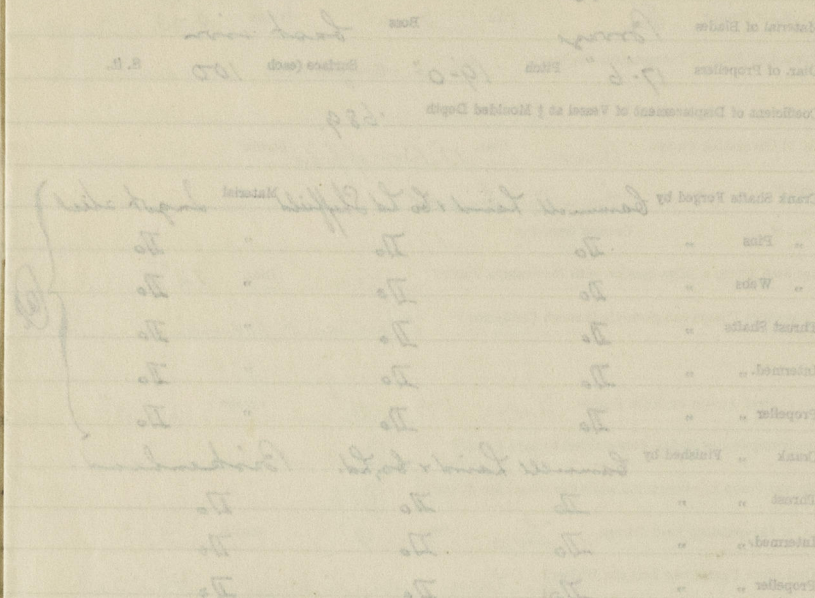
Of what Material are the After Bearings composed? *Lignum vital.*

Are Means provided for lubricating the After Bearings with Oil? *No*

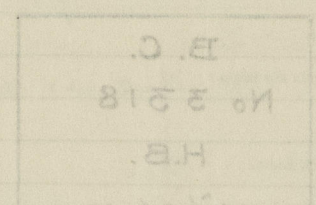
" " to prevent Sea Water entering the Stern Tubes? *No*

If so, what Type is adopted? *✓*

## SKETCH OF CRANK SHAFT.



STAMP MARKS ON SHAFTS



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No. of Blades each Propeller

*Four*

Fitted or Solid?

*Fitted*

Material of Blades

*Brass*

Boss

*cast iron*

Diam. of Propellers

*17'-6" Pitch 19'-0"*

Surface (each

*100*

S. ft.

Coefficient of Displacement of Vessel at  $\frac{1}{2}$  Moulded Depth*.689.*

Crank Shafts Forged by

*Cammell Laird & Co. Ltd. Sheffield*

Material

*Engish steel*

,, Pins

*Do**Do*

,,

*Do*

,, Webs

*Do**Do*

,,

*Do*

Thrust Shafts

*Do**Do*

,,

*Do*

Intermed. ,,

*Do**Do*

,,

*Do*

Propeller ,,

*Do**Do*

,,

*Do*

Crank ,, Finished by

*Cammell Laird & Co. Ltd.**Birkenhead.*

Thrust ,,

*Do**Do**Do*

Intermed. ,,

*Do**Do**Do*

Propeller ,,

*Do**Do**Do*

STAMP MARKS ON SHAFTS.

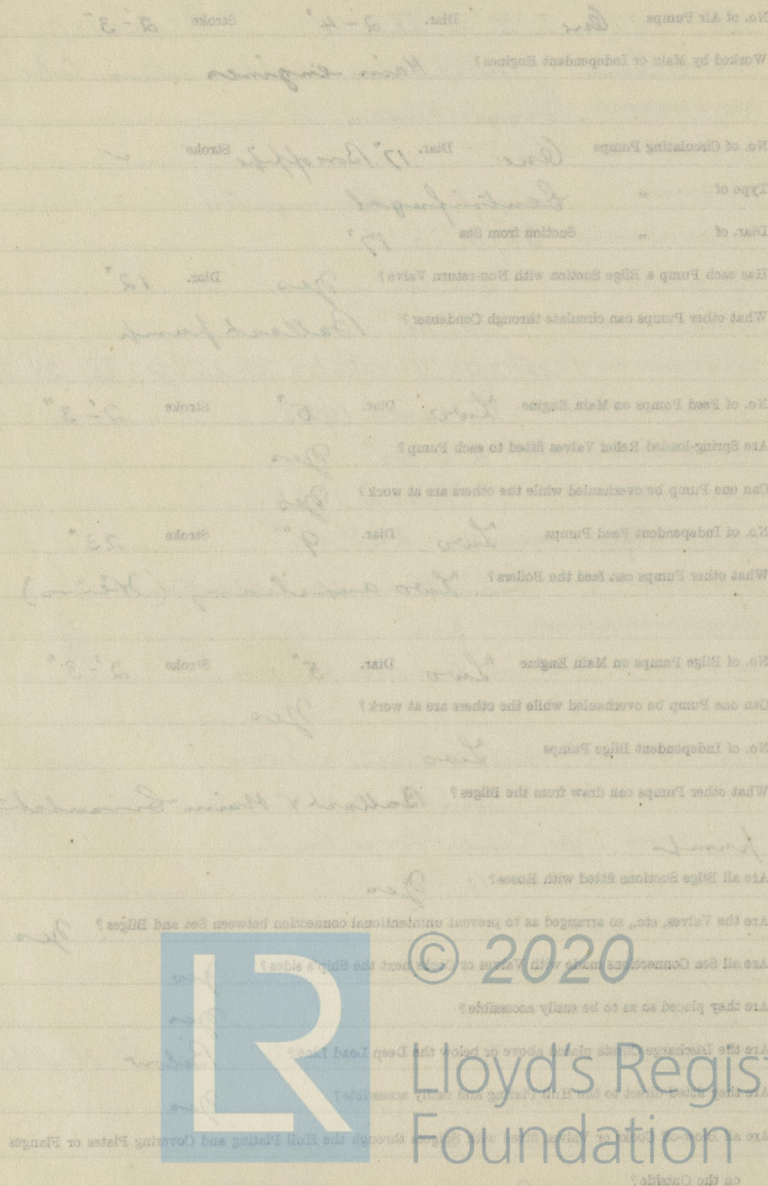
B. C.

No 3318

H.B.

24/3/27.

## SKETCH OF PROPELLER SHAFT.





## TRANS PUMPS, ETC. SKETCH OF

No. of Air Pumps *One* Diar. *2'-4"* Stroke *2'-3"*

Worked by Main or Independent Engines? *Main engines*

No. of Circulating Pumps *One* Diar. *17" Bone off pipe* Stroke *✓*

Type of *" Centrifugal*

Diar. of *" Suction from Sea 17"*

Has each Pump a Bilge Suction with Non-return Valve? *Yes* Diar. *12"*

What other Pumps can circulate through Condenser? *Ballast pump*

No. of Feed Pumps on Main Engine *Two* Diar. *5"* Stroke *2'-3"*

Are Spring-loaded Relief Valves fitted to each Pump? *Yes*

Can one Pump be overhauled while the others are at work? *Yes*

No. of Independent Feed Pumps *Two* Diar. *9"* Stroke *23"*

What other Pumps can feed the Boilers? *Two auxiliary (Wiers)*

No. of Bilge Pumps on Main Engine *Two* Diar. *5"* Stroke *2'-3"*

Can one Pump be overhauled while the others are at work? *Yes*

No. of Independent Bilge Pumps *Two*

What other Pumps can draw from the Bilges? *Ballast & Main Circulating*

*pump*  
Are all Bilge Suctions fitted with Roses? *Yes*

Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges? *Yes*

Are all Sea Connections made with Valves or Cocks next the Ship's sides? *Yes*

Are they placed so as to be easily accessible? *Yes*

Are the Discharge Chests placed above or below the Deep Load Line? *Below*

Are they fitted direct to the Hull Plating and easily accessible? *Yes*

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges

on the Outside? *Yes*

## BOILERS



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## BOILERS.

Works No. *924 I. II. III. IV.*

No. of Boilers *Four* Type *Multitubular circular return tube*

Single or Double-ended *Single ended.*

No. of Furnaces in each *Four*

Type of Furnaces *Leighton's corrugated*

Date when Plan approved *22/4/26.*

Approved Working Pressure *210 lbs*

Hydraulic Test Pressure *365 lbs*

Date of Hydraulic Test *I-23/12/26. II-14/6/27. III-23/6/27. IV-28/7/27.*

" when Safety Valves set *1<sup>st</sup> March 1928.*

Pressure at which Valves were set *215 lbs*

Date of Accumulation Test *1<sup>st</sup> March 1928.*

Maximum Pressure under Accumulation Test *225 lbs*

System of Draught *Forced draught (Howdens)*

Can Boilers be worked separately? *Yes*

Makers of Plates *David Colville & Sons.*

" Stay Bars *David Colville & Sons.*

" Rivets *The Rivet Bolt & Nut Co.*

" Furnaces *The Leeds Forge Co., Ltd.*

Greatest Internal Diam. of Boilers *16'-0"*

" Length " *11'-9"*

Square Feet of Heating Surface each Boiler *2900<sup>ft</sup>*

" " Grate " " *71<sup>ft</sup>*

No. of Safety Valves each Boiler *Two* Rule Diam. *2<sup>3</sup>/<sub>4</sub>"* Actual *2<sup>3</sup>/<sub>4</sub>" High lift.*

Are the Safety Valves fitted with Easing Gear? *Yes*

No. of Pressure Gauges, each Boiler *One* No. of Water Gauges *Two*

" Test Cocks " *✓* " Salinometer Cocks *One*



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Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars? *Back gauge fitted to shell*  
 Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes? *Front " mounted on pillars*  
 Are these Pipes connected to Boilers by Cocks or Valves? *Cocks*  
 Are Blow-off Cocks or Valves fitted on Boiler Shells? *Valves*  
 No. of Strakes of Shell Plating in each Boiler *One*  
 " Plates in each Strake *Two*  
 Thickness of Shell Plates Approved *1 3/16"*  
 " " in Boilers *1 3/16"*  
 Are the Rivets Iron or Steel? *Steel*  
 Are the Longitudinal Seams Butt or Lap Joints? *Butt*  
 Are the Butt Straps Single or Double? *Double*  
 Are the Double Butt Straps of equal width? *Yes*  
 Thickness of outside Butt Straps *1 1/4"*  
 " inside " *1 3/8"*  
 Are Longitudinal Seams Hand or Machine Riveted? *Machine*  
 Are they Single, Double, or Treble Riveted? *Treble*  
 No. of Rivets in a Pitch *Five*  
 Diam. of Rivet Holes *1 5/8"* Pitch *10 3/16"*  
 No. of Rows of Rivets in Centre Circumferential Seams *✓*  
 Are these Seams Hand or Machine Riveted? *✓*  
 Diam. of Rivet Holes *✓* Pitch *✓*  
 No. of Rows of Rivets in Front End Circumferential Seams *Two*  
 Are these Seams Hand or Machine riveted? *Machine*  
 Diam. of Rivet Holes *1 5/8"* Pitch *4"*  
 No. of Rows of Rivets in Back End Circumferential Seams *Two*  
 Are these Seams Hand or Machine Riveted? *Machine*  
 Diam. of Rivet Holes *1 5/8"* Pitch *4"*  
 Size of Manholes in Shell *16" x 12"*  
 Dimensions of Compensating Rings *3'-2 1/2" x 2'-11 1/2" x 1 19/32" (Flanged)*



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Thickness of End Plates in Steam Space Approved

 $1\frac{1}{8}$ 

" " " " in Boilers

 $1\frac{1}{8}$ Pitch of Steam Space Stays  $16\frac{11}{16}$  Vertically by  $17\frac{1}{2}$  HorizontallyDiar. " " " Approved  $3\frac{1}{8}$  Threads per Inch 6" " " " in Boilers  $3\frac{1}{8}$  " 6.

Material of " " " Steel

How are Stays Secured? Nuts &amp; washers inside and outside.

Diar. and Thickness of Loose Washers on End Plates 11" by  $1\frac{3}{16}$ 

" " Riveted " " "

Width " Doubling Strips " ✓

Thickness of Middle Back End Plates Approved

 $15\frac{1}{16}$ 

" " " " in Boilers

 $15\frac{1}{16}$ 

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " "  $14\frac{3}{4}$ Diar. of Stays Approved  $1\frac{7}{8}$  Threads per Inch 9" " in Boilers  $1\frac{7}{8}$  " 9

Material " Steel

Are Stays fitted with Nuts outside? Yes

Thickness of Back End Plates at Bottom Approved

 $15\frac{1}{16}$ 

" " " " in Boilers

 $15\frac{1}{16}$ 

Pitch of Stays at Wide Spaces between Fireboxes

 $14\frac{3}{4}$ 

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom Approved

 $1\frac{1}{32}$ 

" " " " in Boilers

 $1\frac{1}{32}$ 

No. of Longitudinal Stays in Spaces between Furnaces

One



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Diar. of Stays Approved  $3\frac{5}{8}$ " Threads per Inch 6

" " in Boilers  $3\frac{5}{8}$ " 6.

Material " Steel

Thickness of Front Tube Plates Approved  $\frac{1}{32}$ "

" " " " in Boilers  $\frac{1}{32}$ "

Pitch of Stay Tubes at Spaces between Stacks of Tubes  $14$ "

Thickness of Doublings in " " "

" Stay Tubes at " " "  $\frac{7}{16}$ "

Are Stay Tubes fitted with Nuts at Front End? Yes

Thickness of Back Tube Plates Approved  $\frac{13}{16}$ "

" " " in Boilers  $\frac{13}{16}$ "

Pitch of Stay Tubes in Back Tube Plates  $7\frac{1}{4}$ " Vertically by  $7\frac{1}{2}$ " Horizontally

" Plain "  $3\frac{5}{8}$ " "  $3\frac{3}{4}$ "

Thickness of Stay Tubes Between  $\frac{1}{16}$ " Top Margin  $\frac{3}{8}$ " Side & bottom margin  $\frac{7}{16}$ "  
and Two  $\frac{1}{4}$ " corner stays in each box  $\frac{1}{2}$ "

" Plain " No S.S.W.G.

External Diar. of Tubes Stay tubes  $2\frac{1}{2}$ " swelled to  $2\frac{3}{4}$ " at front ends  
Plain "  $2\frac{1}{2}$ " "  $2\frac{9}{16}$ "

Material " Iron.

Thickness of Furnace Plates Approved  $\frac{12}{32}$ "

" " " in Boilers  $\frac{12}{32}$ "

Smallest outside Diar. of Furnaces  $3'-6\frac{3}{4}"$

Length between Tube Plates  $7'-10"$

Width of Combustion Chambers (Front to Back)  $3'-0\frac{9}{32}"$  (Mean)

Thickness of " " Tops Approved  $\frac{5}{8}$ "

" " " in Boilers  $\frac{5}{8}$ "

Pitch of Screwed Stays in C.C. Tops  $8"$



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Diar. of Screwed Stays Approved  $1\frac{5}{8}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{5}{8}"$   
 Material " " Steel

Thickness of Combustion Chamber Sides Approved  $\frac{5}{8}"$   
 " " " in Boilers  $\frac{5}{8}"$

Pitch of Screwed Stays in C.O. Sides  $7\frac{1}{4}"$  Vertically by  $8\frac{5}{8}"$  Horizontally

Diar. " " Approved  $1\frac{5}{8}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{5}{8}"$   
 Material " " Steel

Thickness of Combustion Chamber Backs Approved  $\frac{11}{16}"$   
 " " " in Boilers  $\frac{11}{16}"$

Pitch of Screwed Stays in C.O. Backs  $8"$  Vertically by  $8\frac{1}{2}"$  Horizontally

Diar. " " Approved  $1\frac{5}{8}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{5}{8}"$   
 Material " " Steel

Are all Screwed Stays fitted with Nuts inside C.O.? Yes

Thickness of Combustion Chamber Bottoms  $1\frac{1}{32}"$  (Spencer wrapper)

No. of Girders over each Wing Chamber Four

" " " Centre " Two

Depth and Thickness of Girders Two plates  $9"$  by  $\frac{7}{8}"$  thick

Material of Girders Steel plate

No. of Stays in each Three

No. of Tubes, each Boiler 462 including 306 plain & 156 stay tubes

Size of Lower Manholes Three  $16" \times 12"$

## VERTICAL DONKEY BOILERS.

No. of Boilers  
 Grosses in Don.  
 Height of Boiler Crown above the Gate  
 Are Boiler Crown Flat or Tapered?  
 Internal Radius of Tapered Boilers  
 Description of Stays in Boiler Crown  
 Diam. of Water Tubes  
 Height of Tapered Crown above the Gate  
 Are Tapered Crown Flats or Tapered?  
 Internal Radius of Tapered Crown  
 No. of Crown Stays  
 External Diam. of Tapered at Top  
 No. of Water Tubes  
 Material of Water Tubes  
 Size of Manhole in Shell  
 Dimensions of Combustion Chamber  
 Heating surface, each Boiler  
 Gross Surface

## SUPERHEATERS:

Description of Superheaters

Where situated?

Which Boilers are connected to superheaters?  
 Can superheaters be shut off while Boilers are working?

No. of safety Valves on each superheater

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## VERTICAL DONKEY BOILERS.

No. of Boilers	Type	Height
Greatest Int. Diam.		
Height of Boiler Crown above Fire Grate		
Are Boiler Crowns Flat or Dished?		
Internal Radius of Dished Ends	Thickness of Plates	
Description of Stays in Boiler Crowns		
Diam. of Rivet Holes	Pitch	Width of Overlap
Height of Firebox Crown above Fire Grate		
Are Firebox Crowns Flat or Dished?		
External Radius of Dished Crowns	Thickness of Plates	
No. of Crown Stays	Diam.	Material
External Diam. of Firebox at Top	Bottom	Thickness of Plates
No. of Water Tubes	Ext. Diam.	Thickness
Material of Water Tubes		
Size of Manhole in Shell		
Dimensions of Compensating Ring		
Heating Surface, each Boiler	Grate Surface	

## SUPERHEATERS.

Description of Superheaters	
Where situated?	
Which Boilers are connected to Superheaters?	
Can Superheaters be shut off while Boilers are working?	
No. of Safety Valves on each Superheater	Diam.
Are " " fitted with Easing Gear?	
Date of Hydraulic Test	Test Pressure
Date when Safety Valves set	Pressure on Valves

## MAIN STEAM PIPES

No. of Pipes	
Material	
External, Welded or Seamless	
Internal Diam.	
Thickness	
How are Flanges secured?	
Date of Hydraulic Test	
Test Pressure	
No. of Pipes	
Material	
External, Welded or Seamless	
Internal Diam.	
Thickness	
How are Flanges secured?	
Date of Hydraulic Test	
Test Pressure	



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## MAIN STEAM PIPES.

No. of Lengths	One	Two	Two
Material	Steel	Steel	Steel
Brazed, Welded or Seamless	Seamless	Seamless	Seamless
Internal Diam.	9 $\frac{1}{2}$ "	7"	7"
Thickness	$\frac{11}{32}$ "	$\frac{7}{32}$ "	$\frac{7}{32}$ "
How are Flanges secured?	Screwed with vanishing thread	Screwed with vanishing thread	Screwed with vanishing thread
Date of Hydraulic Test	12/11/27	12/8/27	16/11/27
Test Pressure	630 lbs.	630 lbs.	630 lbs.

No. of Lengths	Four	Two	Two
Material	Steel	Steel	Steel
Brazed, Welded or Seamless	Seamless	Seamless	Seamless
Internal Diam.	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "
Thickness	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "
How are Flanges secured?	Screwed with vanishing thread	Screwed with vanishing thread	Screwed with vanishing thread
Date of Hydraulic Test	16/6/27	22/7/27	12/11/27
Test Pressure	630 lbs.	630 lbs.	630 lbs.

No. of Lengths	
Material	
Brazed, Welded or Seamless	
Internal Diam.	
Thickness	
How are Flanges secured?	
Date of Hydraulic Test	
Test Pressure	

## EVAPORATORS



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## EVAPORATORS.

No. *One* Type *Vertical* *40* Tons per Day  
 Makers *G. J. Heir Ltd.*  
 Working Pressure *15 lbs.* Test Pressure *Shell Boils* Date of Test *5<sup>th</sup>/11/26.*  
 Date of Test of Safety Valves under Steam *1<sup>st</sup> March 1928*

## FEED WATER HEATERS.

No. *One* Type *Low pressure (Direct contact)*  
 Makers *G. J. Heir Ltd.*  
 Working Pressure *20 lbs.* Test Pressure *40 lbs* Date of Test *5<sup>th</sup>/11/26.*

## FEED WATER FILTERS.

No. *One* Type *Pressure* Size *Lead pipe 4" Bore*  
 Makers *Merens Hocking & Co. Ltd.*  
 Working Pressure *210 lbs.* Test Pressure *505 lbs.* Date of Test *27/9/26*

## LIST OF DONKEY PUMPS.

PUMP.	No.	MAKERS.	SIZE.
MAIN FEED.	2	WEIRS	9' x 12' x 24'
AUX. Do.	1	Do.	5½' x 8' x 12'
GENERAL SERVICE.	1	Do.	8' x 10½' x 18'
BALLAST.	1	Do.	11' x 9' x 21'
SANITARY.	1	Do.	6' x 6' x 12'
FRESH WATER.	1	Do.	4' x 3½' x 8'
REFRIG. CIRCULATING	1	Do.	10' x 9' x 24'



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OTHER ARTICLES OF SPARE GEAR:—

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## REFRIGERATORS.

No. of Machines *One* Capacity of each *Hall's No 15A.*Makers *J. & E. Hall Ltd. Dartford.*Description *One Duplex C.O.<sup>2</sup> Horizontal  
Marine Type.*No. of Steam Cylinders, each Machine *2* No. of Compressors *2* No. of Cranks *2*

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines

or Independently *One air pump worked off the  
Refrigerating Machine. One Keir's  
independent circulating water pump  
Two Hall's Duplex Brine pumps (Steam  
driven) and Four circulating air fans  
Electrically driven.*

System of Refrigeration *Air circulation*Insulation *Granulated cork*

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated

Spaces? *Yes*Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage? *Yes*Are all Bilge, Sounding, and Air Pipes in Insulated Spaces properly insulated? *Yes*Are Thermometer Tubes so arranged that Water cannot enter and freeze in them? *Yes*

Date of Test under Working Conditions

*8<sup>th</sup> March 1928.*

## RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after <sup>10</sup> / <sub>10</sub> hours.
No 1 Second Deck	47°	26°		9°
" Third "	47°	23°		8°
" Fourth "	47°	24°		6°
" Lower Hold.	47°	23°		8°
No 2 Second Deck	48°	26°		7°
" Third "	47°	24°		6°
" Fourth "	46°	23°		7°
" Lower Hold.	47°	24°		7°
No 3 Second Deck	50°	28°		7°
" Third "	50°	26°		7°
" Fourth "	49°	26°		9°
No 4 Second "	49°	29°		7°
" Third "	49°	26°		8°
" Fourth "	49°	25°		10°

Articles of Spare Gear for Refrigerating Plant carried on board:—



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No. of Circuits	Description of Circuits	No. of Lights	No. of Motors	No. of Heaters
1	Emergency	82		
2	Engine Rm. etc.	108		
3	Ford Holders	64		
4	After &c	57		
5	For all & Prop.	62		
6	Light Officers	73		
7	Salon Accom.	62		
8	Eng. & Rm.	21		
9	Fans Nos 1, 2, 3, 4.	12		
10	Salon Heaters	-		
11	Cabin &c	-		
12	Ash Hoist	2		

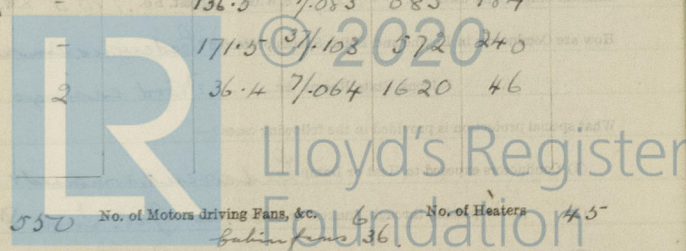
8 March 1922.

## ELECTRIC LIGHTING.

Installation Fitted by *The Sunderland Forge & Eng. Co. Ltd.*No. and Description of Dynamos *3- 5.5 K.W. Steam act. & 1- 6 K.W. Petrol act.*Makers of Dynamos *Messrs Campbell & Ischerwood Ltd.*Capacity *3 at 500* Amperes, at *110* Volts, *3 at 450* Revs. per Min.  
*1 at 54.5* *1 at 900*Current Alternating or Continuous *Continuous*Single or Double Wire System *Single except in compass area*Position of Dynamos *Star side Main Engine Room & Emer. Dynamo Room.*Main Switch Board *Star side after end Main Engine Room.*No. of Circuits to which Switches are provided on Main Switch Board *15.*

Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density. Amps. per Sq. Inch.	Conductivity of Conductor. M.P.S.	Insulation Resistance per Mile.
Emergency	82		60	14/0.52	1500	64	
Engine Rm. etc.	108		25.15	7/0.64	1120	46	
Ford Holders	64		11.2	8/0	500	60	
After &c	57		10.2	8/0	454	80	
For all & Prop.	62		14.85	8/0	660	80	
Light Officers	73		21.25	8/0	945	80	
Salon Accom.	62		26.1	8/0	1160	80	
Eng. & Rm.	21		10.45	7/0.36	1490	24	
Fans Nos 1, 2, 3, 4.	12		232 Each	37/1.03	774	240	
Salon Heaters	-		136.5	37/0.83	683	184	
Cabin &c	-		171.5	37/1.03	572	240	
Ash Hoist	2		36.4	7/0.64	1620	46	

Total No. of Lights *550* No. of Motors driving Fans, &c. *6* No. of Heaters *45*Current required for Motors and Heaters *1292 Amps.*




Positions of Auxiliary Switch Boards, with No. of Switches on each

*Emergency Switchboard in Emergency  
Dynamo Room (Six circuits)*

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

*Yes*

On Aux. " " each Auxiliary Circuit

*Yes*

Wherever a Cable is reduced in size

*Yes*

To each Lamp Circuit

*Yes*

To both Flow and Return Wires of all Circuits when the Double-Wire System is adopted

☒

Are the Fuses of Standard Sizes?

*Yes*

Are all Switches and Cut-outs constructed of Non-inflammable Material?

*Yes*

Are they placed so as to be always and easily accessible?

*Yes*

Smallest Single Wire used, No. *3/029* S.W.G., Largest, No. *9/103* S.W.G.

How are Conductors in Engine and Boiler Spaces protected? *Lead covered, armoured & braided*

" Saloons, State Rooms, &c., " *Wood casings*

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp *Lead covered, armoured & braided*

(2) " passing through Bunkers or Cargo Spaces *Gal. Iron Pipes*

(3) " " Deck Beams or Bulkheads *Bushed & W.T. Glands*

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables

is unimpaired? *Yes*

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces? *Yes*

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? *Yes*

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously affected by them? *Yes*

Have Tests been made to prove that this condition has been satisfactorily fulfilled? *Yes*

Has the Insulation Resistance over the whole system been tested? ☒

What does the Resistance amount to? ☒ Ohms.

Is the Installation supplied with a Voltmeter? *Yes*

" " " an Ampere Meter? *Yes*

Date of Trial of complete Installation *17/3/28.*

Duration of Trial *6 Hours.*

Have all the requirements of Section 42 been satisfactorily carried out?

*Emergency Dynamo (6 K.W.)  
Makers Campbell, Isherwood Liverpool.*



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