

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1544 No. in Register Book 2756

Received at Head Office

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ~~Single Triple~~ Screw S. S.

— "TORTUGUERO" —

Official No.

Port of Registry

GLASGOW.

Registered Owners

MESS^{RS} ELDERS & FYFFES, LTD

Engines Built by

ALEX^S STEPHEN & SONS, LTD

at

LINTHOUSE, GLASGOW.

Main Boilers Built by

ALEX^S STEPHEN & SONS, LTD

at

LINTHOUSE, GLASGOW.

Donkey

at

Date of Completion

1ST DECEMBER, 1921.

First Visit

8-7-19

Last Visit

1-12-21

Total Visits 120.

Lloyd's Register
Foundation

004466-004476-0215

RECIPROCATING ENGINES.

Works No. **493** No. of Sets **1** Description **Tr. exp? Inverted, s.c.**

No. of Cylinders each Engine **3** No. of Cranks **3**
 Diars. of Cylinders **27½", 46½", 78"** Stroke **54"**
 Cubic feet in each L.P. Cylinder **149.3**
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.? **Yes**
 " " " each Receiver? **Yes**
 Type of H.P. Valves, **Piston.**
 " 1st I.P., **Andrew & Cameron.**
 " 2nd I.P.,
 " L.P., **Double ported slide**
 " Valve Gear **Stephensons Link motion.**
 " Condenser **Weirs** Cooling Surface **3500** sq. ft.
 Diameter of Piston Rods (plain part) **8¼"** Screwed part (bottom of thread) **5¾"**
 Material " **1.8.**
 Diar. of Connecting Rods (smallest part) **7½"** Material **1.8.**
 " Crosshead Gudgeons **8¼"** Length of Bearing **9"** Material **W.1.**
 No. of Crosshead Bolts (each) **2** Diar. over Thrd. **3¼"** Thrds. per inch **8.**
 " Crank Pin " " **2** " **4½"** " " **Iron.**
 " Main Bearings **6** Lengths **17", 17½", 19"**
 " Bolts in each **2** Diar. over Thread **3¾"** Threads per inch **Material**
 " Holding Down Bolts, each Engine **163** Diar. **1¼"** No. of Metal Chocks **167**
 Are the Engines bolted to the Tank Top or to a Built Seat? **Tank Top.**
 Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? **Yes**
 If not, how are they fitted?

3 Connecting Rods, Forged by **W^m. Beardmore & Co. L^{td}. Parkhead Forge.**
3 Piston " " **D^o.**
3 Crossheads, " **Keay & Usher, L^{td}. Sunderland.**
 Connecting Rods, Finished by **Alex. Stephen & Sons, L^{td}.**
 Piston " " **D^o.**
 Crossheads, " **D^o.**
 Date of Harbour Trial **9-10-21**
 " Trial Trip **1-12-21**
 Trials run at **Firth of Clyde.**
 Were the Engines tested to full power under Sea-going conditions? **Yes.**
 If so, what was the I.H.P. **4600** Revols. per min. **88**
 Pressure in 1st I.P. Receiver, **85** lbs., 2nd I.P., **—** lbs., L.P., **26** lbs., Vacuum, **27** ins.
 Speed on Trial **15 knots. 15.07**
 If the Conditions on Trial were such that full power records were not obtained give the following estimated data:—
 Builders' estimated I.H.P. **3750** Revols. per min. **80?**
 Estimated Speed



© 2020

Lloyd's Register
Foundation

3 Connecting Rods forged by
 3 Pistons
 3 Crossheads
 Connecting Rods fitted by
 Pistons
 Crossheads
 Date of Harbour Trial
 Trial Trip
 Trials run at
 Speed on Trial
 If the Conditions on Trial were such that full power would be the following estimated
 Date
 Trials run at
 Speed on Trial
 Turbine Spindles forged by
 Wheels forged or cast by
 Reduction Gear Shafts forged by
 Wheels forged or cast by

TURBINE ENGINES.

Works No. Type of Turbines
 No. of H.P. Turbines No. of I.P. No. of L.P. No. of Astern

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

Is Single or Double Reduction Gear employed?

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

" " I.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

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.



© 2020

Lloyd's Register
 Foundation

TURBINE ENGINES

No. of H.P. Turbines
No. of L.P. Turbines
Type of Turbines
No. of Axles

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

Is Single or Double Reduction Gear employed?

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

" " " " " "

" " " " " "

Is Reduction Gear

" " " " " "

Turbine Shaft

Total Shaft Horse Power

Date of Harbours Trial

Test Trip

Indication as

Speed on Trip

Turbine Shafts driven by

" " " " " "

Indication Gear Shafts driven by

" " " " " "

DESCRIPTION OF INSTALLATION

TURBO-ELECTRIC PROPELLING MACHINERY

No. of Turbo Generating Sets
Capacity of each

Type of Turbines employed

Description of Generators

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

Is Single or Double Reduction Gear employed?

Revolutions per min. of Turbines at Full Power

" " " " " "

" " " " " "

Is Reduction Gear

" " " " " "

Turbine Shaft

Total Shaft Horse Power

Date of Harbours Trial

Test Trip

Indication as

Speed on Trip

Turbine Shafts driven by

" " " " " "

Indication Gear Shafts driven by

" " " " " "

DESCRIPTION OF INSTALLATION



© 2020

Lloyd's Register
Foundation

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

Revs. per min. of Generators at Full Power

" " Motors "

" " Propellers "

Total Shaft Horse Power "

Date of Harbour Trial

" Trial Trip

Trials run at

Makers of Turbines

" Generators

" Motors

" Reduction Gear

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by



© 2020

Lloyd's Register
Foundation

No. of Blades each Propeller 4 Fitted or Solid? Fitted.Material of Blades Bronze

Boss

Cast Iron SteelDiam. of Propellers 17'6"

Pitch

19'0"

Surface (each)

80-7 Projected
8 ft.
98-48 flat.Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth762

Crank Shafts Forged by

Wm. Beardmore & Co. Ltd., Phil.

Material

I.S.

Pins

Do.

Webs

do.M.S.

Thrust Shafts

do.I.S.

Intermed. "

do."

Propeller "

do."

Crank " Finished by

Alex. Stephen & Sons, Ltd.

Thrust "

do.

Intermed. "

do.

Propeller "

do.STAMP MARKS ON SHAFTS.
INTERMEDIATE SHAFTS

B.C.

G.S.M.

6912

6/4/20.

TAIL SHAFTS

B.C.

M. 6912

G.S.M.

6/4/20.

CRANK SHAFT

B.C.

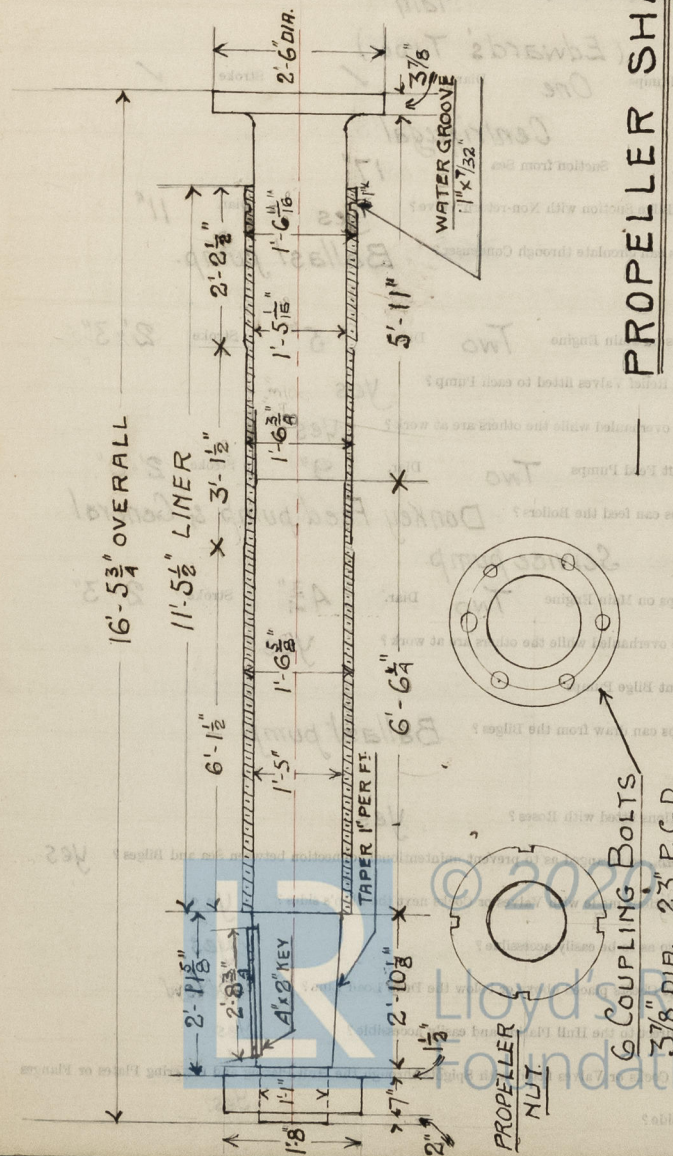
6912

G.S.M.

6/4/20.

B.C.	3430
B.C.	6145
R.S.	6149
R.S.	3/9/19
	16/9/19

SKETCH OF PROPELLER SHAFT



PROPELLER SHAFT

ONE OFF THUS

No 493

PUMPS, ETC.

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

Worked by Main or Independent Engines? *Main*

(Edwards' Type)

No. of Circulating Pumps *One* Diar. ☒ Stroke ☒

Type of " *Centrifugal*

Diar. of " *Suction from Sea 17"*

Has each Pump a Bilge Suction with Non-return Valve? *Yes* Diar. *11"*

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 *2' 0"*

What other Pumps can feed the Boilers? *Donkey Feed pump & General Service pump.*

No. of Bilge Pumps on Main Engine *Two* Diar. *4 3/4"* Stroke *2' 3"*

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

No. of Independent Bilge Pumps

What other Pumps can draw from the Bilges? *Ballast 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.

Works No. *493*

No. of Boilers *4*

Single or Double-ended *Single ended*

No. of furnaces in each *1*

Type of Furnaces *Leeds Bulb*

Date when first approved *10-2-19*

Approved Working Pressure *205 lbs per sq in*

Hydraulic Test Pressure *360 "*

Date of Hydraulic Test *2-2-22*

When first tested *10-10-21*

Pressure at which tested *205 lbs*

Date of Re-assembly Test *10-10-21*

Maximum Pressure under Re-assembly Test *205 lbs*

System of Drafting *205 lbs*

Can boilers be worked separately? *Yes*

Boiler of Pattern *Wt. Barnard & Co. Ltd.*

Boiler No. *1*

Boiler Date *10-10-21*

Boiler No. *2*

Boiler No. *3*

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

Length *16' 0"*

Pressure Test of Heating Surface *205 lbs*

Boiler No. *4*

Boiler No. *5*

Boiler No. *6*

No. of Boilers in Service *4*

Test Cocks *1*



© 2020

Lloyd's Register
Foundation

BOILERS.

Works No. **493**

No. of Boilers **4** Type **Multitubular.**

Single or Double-ended **Single ended.**

No. of Furnaces in each **A**

Type of Furnaces **Leeds Bulb.**

Date when Plan approved **10-2-19**

Approved Working Pressure **205 Lbs. per sq. in.**

Hydraulic Test Pressure **360 " " "**

Date of Hydraulic Test **S.F. & P.F. 21-9-20. S.A. & P.A. 5-10-20.**

„ when Safety Valves set **19-10-21**

Pressure at which Valves were set **210 Lbs.**

Date of Accumulation Test **19-10-21**

Maximum Pressure under Accumulation Test **217 Lbs.**

System of Draught **Howden's Forced.**

Can Boilers be worked separately? **Yes.**

Makers of Plates **W^m Beardmore & Co. Ltd**

„ Stay Bars **The Steel Coy. of Scotland, Ltd**

„ Rivets **The Rivet, Bolt & Nut Co.**

„ Furnaces **The Leeds Forge Co.**

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

„ „ Length „ **11' 9"**

Square Feet of Heating Surface each Boiler **2877.97 sq. ft.**

„ „ Grate „ „ **68.5 sq. ft.**

No. of Safety Valves each Boiler **1 Double** Diam. **3 1/4"**

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

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

No. of Water Gauges **One**

Test Cocks „ **3** „ Salinometer Cocks **One**

— TEST MARKS ON BOILERS. —

S.F. & P.F. BOILERS.

B.C. TEST
 No 3825
 360 Lbs.
 W.P. 205 "
 G. S. M.
 21. 9. 20

S.A. & P.A. BOILERS.

B.C. TEST
 No 3859
 360 Lbs.
 W.P. 205 "
 G. S. M.
 5. 10. 20.

ACCUMULATION TEST.

	P.F.	S.F.	P.A.	S.A.
WATER IN GLASSES. BEFORE TEST.	9 3/4"	10 3/4"	9 3/4"	9 3/8"
AFTER "	7"	8 3/4"	6 3/8"	6 1/2"

GREATEST RISE OF PRESSURE

7 LBS

FAN IN ENGINE ROOM

1 1/8" To 1 1/2"

" " ASHPITS

1/2"

TIME

15 MINUTES [12:15 pm To 12:30 pm]

© 2020
 Lloyd's Register
 Foundation

Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars?

Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes?

Are these Pipes connected to Boilers by Cocks or Valves?

Are Blow-off Cocks or Valves fitted on Boiler Shells?

No. of Strakes of Shell Plating in each Boiler

Plates in each Strake

Thickness of Shell Plates Approved

in Boilers

Are the Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Butt Straps Single or Double?

Are the Double Butt Straps of equal width?

Thickness of outside Butt Straps

inside

Are Longitudinal Seams Hand or Machine Riveted?

Are they Single, Double, or Treble Riveted?

No. of Rivets in a Pitch

Diam. of Rivet Holes

Pitch

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

Are these Seams Hand or Machine riveted?

Diam. of Rivet Holes

Pitch

No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes

Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings

Pillars

Pipes

Cocks

Valves

3

1

$\frac{17}{32}$ "

$\frac{9}{16}$ "

Steel

Butt

Double

No Yes.

$\frac{5}{32}$ "

$\frac{9}{32}$ "

Machine

Treble

5

$10\frac{1}{2}$ "

-

-

-

-

2

-

3'94"

2

Machine

3'94"

16" x 12"

2'7" x 3'3" x $\frac{17}{32}$ "



© 2020

Lloyd's Register
Foundation

Thickness of End Plates in Steam Space Approved $\frac{7}{32}$ "
 " " " " in Boilers $\frac{7}{32}$ "
 Pitch of Steam Space Stays CENTRE WING $16\frac{1}{8}" \times 19"$
 Diam. " " " Approved $2\frac{7}{8}"$ 3" Threads per Inch 6
 " " " " in Boilers Do. " "
 Material of " " " Steel
 How are Stays Secured? Double Nuts. Washers outside C. row, wing stays.
 Diam. and Thickness of Loose Washers on End Plates $9\frac{3}{4}" \times \frac{13}{16}"$
 " " Riveted " " "
 Width " " Doubling Strips " "

Thickness of Middle Back End Plates Approved $\frac{7}{8}"$
 " " " " in Boilers $\frac{7}{8}"$
 Thickness of Doublings in Wide Spaces between Fireboxes $\frac{11}{16}"$
 Pitch of Stays at " " " " $8" \times 9"$
 Diam. of Stays Approved $1\frac{5}{8}"$ Threads per Inch 9
 " " in Boilers $1\frac{5}{8}"$ " 9
 Material " Steel
 Are Stays fitted with Nuts outside? Yes

Thickness of Back End Plates at Bottom Approved $\frac{7}{8}"$
 " " " " in Boilers $\frac{7}{8}"$
 Pitch of Stays at Wide Spaces between Fireboxes $8" \times 9"$
 Thickness of Doublings in " " $\frac{11}{16}"$
 Thickness of Front End Plates at Bottom Approved $\frac{7}{8}"$
 " " " " in Boilers $\frac{7}{8}"$
 No. of Longitudinal Stays in Spaces between Furnaces 3.



© 2020

Lloyd's Register
Foundation

Diar. of Stays Approved $2\frac{1}{4}" \times 2\frac{1}{2}"$ Threads per Inch 9

" " in Boilers Do.

Material " Steel

Thickness of Front Tube Plates Approved

$\frac{7}{8}"$
 $\frac{7}{8}"$
 $\frac{7}{8}"$

" " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

$7\frac{3}{4}" \times 12"$

Thickness of Doublings in " " "

$\frac{11}{16}"$

" Stay Tubes at " " "

$\frac{3}{8}"$, $\frac{7}{16}"$, $\frac{1}{2}"$

Are Stay Tubes fitted with Nuts at Front End?

No

Thickness of Back Tube Plates Approved

$\frac{13}{16}"$

" " " in Boilers

$\frac{7}{8}"$

Pitch of Stay Tubes in Back Tube Plates

$7\frac{3}{4}" \times 12"$

" Plain "

$3\frac{7}{8}" \times 4"$

Thickness of Stay Tubes

$\frac{3}{8}"$, $\frac{7}{16}"$, $\frac{1}{2}"$

" Plain "

8 W. G.

External Diar. of Tubes

$2\frac{3}{4}"$

Material "

Wrot Iron, Lap welded

Thickness of Furnace Plates Approved

$\frac{17}{32}"$

" " " in Boilers

$\frac{17}{32}"$

Smallest outside Diar. of Furnaces

$3' 2\frac{7}{16}"$

Length between Tube Plates

$7' 10"$

Width of Combustion Chambers (Front to Back)

$3' 2"$ MEAN

Thickness of " " Tops Approved

$\frac{11}{16}"$

" " " in Boilers

$\frac{11}{16}"$

Pitch of Screwed Stays in C.C. Tops

WING $7\frac{1}{2}" \times 9\frac{1}{2}"$. CENTRE $7\frac{1}{2}" \times 10"$

Diar. of Screwed Stays Approved $1\frac{1}{2}" \times 1\frac{1}{2}"$ Threads per Inch 9

" " in Boilers " " "

Material " Steel

Thickness of Combustion Chamber Plates Approved

$\frac{11}{16}"$
 $\frac{11}{16}"$
 $\frac{11}{16}"$

" " " in Boilers

Pitch of Screwed Stays in C.C. Tops

$8' \times 8'$

Diar. " " Approved

$1\frac{1}{2}"$

" " in Boilers

$1\frac{1}{2}"$

Material " Steel

Thickness of Combustion Chamber Plates Approved

$\frac{11}{16}"$
 $\frac{11}{16}"$
 $\frac{11}{16}"$

" " " in Boilers

$\frac{11}{16}"$

Pitch of Screwed Stays in C.C. Tops

$8' \times 8'$

Diar. " " Approved

$1\frac{1}{2}"$

" " in Boilers

$1\frac{1}{2}"$

Material " Steel

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

Yes

Thickness of Combustion Chamber Bottoms

$\frac{11}{16}"$
 $\frac{11}{16}"$
 $\frac{11}{16}"$

No. of Girders over each Wing Chamber

1

Depth and Thickness of Girders

$1\frac{1}{2}" \times 1\frac{1}{2}"$

Material of Girders

Steel

No. of Girders in C.C. Tops

1

Diar. of Girders

$1\frac{1}{2}" \times 1\frac{1}{2}"$

Thickness of Girders

$\frac{11}{16}"$

No. of Girders in C.C. Tops

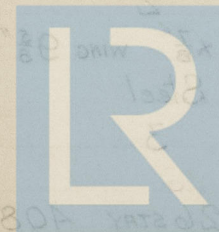
1

Diar. of Girders

$1\frac{1}{2}" \times 1\frac{1}{2}"$

Thickness of Girders

$\frac{11}{16}"$



© 2020

Lloyd's Register
Foundation

Diag. of Screwed Stays Approved $\frac{1\frac{3}{4}}{4}$ $\frac{1\frac{5}{8}}{8}$ Threads per Inch 9

" " " in Boilers

Do.

Material " "

Steel

Thickness of Combustion Chamber Sides Approved

$\frac{11}{16}$ "

" " " " in Boilers

$\frac{11}{16}$ "

Pitch of Screwed Stays in C.O. Sides

8" x 9"

Diag. " " Approved

$\frac{1\frac{5}{8}}{8}$

Threads per Inch 9

" " " in Boilers

Do.

Material " "

Steel

Thickness of Combustion Chamber Backs Approved

$\frac{11}{16}$ "

" " " in Boilers

$\frac{11}{16}$ "

Pitch of Screwed Stays in C.O. Backs

7 $\frac{1}{2}$ " x 10"

Diag. " " Approved

$\frac{1\frac{3}{4}}{4}$ $\frac{1\frac{7}{8}}{8}$ 2"

Threads per Inch 9"

" " " in Boilers

Do.

Material " "

Steel

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

Yes
 $\frac{25}{32}$ "

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

4

" " " Centre "

2

Depth and Thickness of Girders CENTRE $9\frac{15}{16}$ " x $\frac{7}{8}$ " WING $9\frac{5}{8}$ " x $\frac{7}{8}$ "

Material of Girders

Steel

No. of Stays in each

3

No. of Tubes, each Boiler 282 PLAIN 126 STAY 408 IN ALL

Size of Lower Manholes

16" x 12"

VERTICAL DONKEY BOILERS

No. of Boilers
Height of Boiler Crown above Fire Grate
Are Boiler Crown Flat or Dished?
Internal Radius of Dished Ends
Description of Burns in Boiler Crown
Type of Rivet Joints
Height of Rivet Crown above Fire Grate
Are Rivet Crown Flat or Dished?
Internal Radius of Dished Crown
No. of Crown Stays
Material
Internal Diam. of Rivet at Top
Thickness
No. of Water Tubes
Material of Water Tubes
Size of Manhole in Shell
Dimensions of Compensation Joint
Heating Surface each Boiler
Gross Surface

SUPERHEATERS

Description of Superheaters

Water situated?

Which boilers are connected to superheaters?

Can superheaters be shut off while boilers are working?

No. of tubes in each superheater?

Are they fitted with heating coils?

Material of tubes?

Date when safety valves set



© 2020

Lloyd's Register
Foundation

VERTICAL DONKEY BOILERS.

No. of Boilers	Type	
Greatest Int. Diar.	Height	
Height of Boiler Crown above Fire Grate		
Are Boiler Crowns Flat or Dished?		
Internal Radius of Dished Ends	Thickness of Plates	
Description of Seams in Boiler Crowns		
Diar. of Rivet Holes	Pitch	Width of Overlap
Height of Firebox Crowns above Fire Grate		
Are Firebox Crowns Flat or Dished?		
External Radius of Dished Crowns	Thickness of Plates	
No. of Crown Stays	Diar.	Material
External Diar. of Firebox at Top	Bottom	Thickness of Plates
No. of Water Tubes	Ext. Diar.	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	Diar.
--	-------

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	Internal Diar.	Thickness	How are Flanges secured?	Date of Hydraulic Test	Test Pressure
1	Steel	10"	3/8"		10/10/11	100 lbs
2	Steel	10"	3/8"		10/10/11	100 lbs
3	Steel	10"	3/8"		10/10/11	100 lbs

AT THE END OF THE COLUMN SEE @ 7th PAGE 28 CONTD



© 2020

Lloyd's Register
Foundation

MAIN STEAM PIPES.

No. of Lengths	One	2	4
Material	S.D. Steel.	Wrot. Iron.	Wrot. Iron.
Brazed, Welded or Seamless	Seamless	L. W.	L. W.
Internal Diam.	10"	5 $\frac{7}{16}$ "	5 $\frac{7}{16}$ "
Thickness	$\frac{3}{8}$ "	$\frac{9}{32}$ "	$\frac{9}{32}$ "
How are Flanges secured?	Screwed & Exp ^d .	Screwed & Exp ^d .	Screwed & Exp ^d .
Date of Hydraulic Test	20/6/21	4/5/21.	4/5/21.
Test Pressure	615 Lbs.	615 Lbs.	615 Lbs.

No. of Lengths	2
Material	L. W. Wrot. Iron.
Brazed, Welded or Seamless	Lap Welded
Internal Diam.	6 $\frac{3}{4}$ "
Thickness	$\frac{3}{8}$ "
How are Flanges secured?	Screwed & Exp ^d .
Date of Hydraulic Test	13/6/21
Test Pressure	615 Lbs.

No. of Lengths	2
Material	Wrot. Iron
Brazed, Welded or Seamless	Lap Welded
Internal Diam.	5 $\frac{7}{16}$ "
Thickness	$\frac{9}{32}$ "
How are Flanges secured?	Screwed & Exp ^d .
Date of Hydraulic Test	13/6/21
Test Pressure	615 Lbs.

ALL MADE BY THE SCOTTISH TUBE CO. LTD., HELEN ST., GOVAN.



© 2020

Lloyd's Register
Foundation

EVAPORATORS.

No. <i>One</i>	Type	<i>Weir's. N° 6200</i>	Tons per Day	<i>40</i>
Makers	<i>G. J. Weir, Ltd., Cathcart, GLASGOW.</i>			
<i>Safety valves set</i>		<i>Shell 30 Lbs</i>		
<i>Working Pressure</i>	<i>15 Lbs.</i>	Test Pressure	<i>Coils 410 "</i>	Date of Test
				<i>19.2.21</i>
Date of Test of Safety Valves under Steam	<i>19-10-21.</i>			

FEED WATER HEATERS.

No. <i>ONE</i>	Type	<i>D. Contact, 23" N° 2334</i>
Makers	<i>G. & J. Weir, Ltd., Cathcart, GLASGOW.</i>	
Working Pressure	Test Pressure <i>100 LBS.</i>	Date of Test <i>10-10-19 [8.0.2]</i>

FEED WATER FILTERS.

No. *DNE* Type *Hocking's "Climax." No 3355* Size *4"*
Makers *Hocking & Co. Ltd. LIVERPOOL.*
Working Pressure *205 lbs.* Test Pressure *492 lbs.* Date of Test *16-10-20*

LIST OF DONKEY PUMPS.

Main Feed Pumps. 2 in No.		12" x 9" x 24"		G. & J. Weir. No 59725 CATHCART	
Donkey "	" 1	8" x 5½" x 12"	D°	No 59727	
Gen. service "	" 1	10½" x 8" x 18"	D°	59730	
Ballast "	" 1	9" x 11" x 21"	D°		
Fresh Water "	" 1	3½" x 4" x 8"	D°	59735	
Sanitary "	" 1	6" x 6" x 12"	D°	59734	
Refrigerator "	" 1	8" x 10" x 21"	D°	60617	
Centrifugal "	" 1	17" Suction.	No 39236 W.H. ALLEN, BEDFORD		

M. F. PUMP. SUCTIONS:- Hotwell. DISCHARGE M. BOILERS
 Aux. F. " " Float Tank. H'well. " "
 GEN. SER. " " Hotwell. Sea. Drain tank. Fr. water. Ballast. Boilers.
 DISCHARGES:- Aux. Cond'g. Overboard. Wash deck. Aux. feed. Main feed.
 BALLAST PUMP. SUCT'g. Sea. Ballast tanks. Bilges.
 " DISCH'g.:- M. & A. Condenser. Refrig. circ.² Overboard.
 F. W. PUMP. SUCT'g.:- F. W. Tanks. DISCH'g.:- F. W. Main.
 SAN. " " Sea. Hot water. " San. & wash deck ser. Hot water tx.
 REFRIG'g. " " Sea. " Refrigerator circ.²
 CENT'g. " " Sea. " M. Condenser.

WINDLASS:- Clarke, Chapman & Co Ltd Gateshead on Tyne.

WINCHES:- 2 By J. Lynn & Co.

A. The Ayrolin Engineering Co. London.

STEERING GEAR:- J. Hastie & Co. Ltd. Greenock

SPARE GEAR.

No. of Top End Bolts.	2	No. of Bot. End Bolts.	2	No. of Cylinder Cover Studs	6
" Coupling Bolts	1 Set	" Main Bearing Bolts	2	" Valve Chest "	6
" Junk Ring Bolts		" Feed Pump Valves	1 Set	" Bilge Pump Valves	1 Set.
" H.P. Piston Rings	1 Set	" I.P. Piston Rings	1 Set	" I.P. Piston Rings	✓
" " Springs		" " Springs		" " Springs	
" Safety Valve "	2	" Fire Bars	1 Set for 1 Boiler.	" Feed Check Valves	A.M. 4 Aux.
" Piston Rods	✓	" Connecting Rods		" Valve Spindles	2
" Air Pump Rods	1	" Air Pump Buckets	1	" Air Pump Valves	1 Set.
" Cir. "	✓	" Cir. "	✓	" Cir. "	✓
" Crank Shafts	✓	" Crank Pin Bushes	1 Pr.	" Crosshead Bushes	1 Pr.
" Propeller Shafts	1	" Propellers	✓	" Propeller Blades	1
" Boiler Tubes	2A	" Condenser Tubes	50	" Condenser Ferrules	50

OTHER ARTICLES OF SPARE GEAR:—

MAIN ENGINES:—

- 1 Set Metallic packing for 1 Piston rod.
- 1 " " " " 1 Valve spindle.
- 6 Pads for Michell Thrust block.
- 3 Cyl. Escape V. springs
- 2 Eccentric straps.
- 100 Assorted bolts & nuts.
- 4 Studs & Nuts for Feed pump glands.
- 4 Do. Bilge " "
- 6 Do. Feed " covers.
- 6 Do. Bilge " "
- 6 Do. Condenser Doors
- 4 Do. Air Pump glands
- 6 Do. " " covers
- 4 Do. V. Spindle glands.
- 1 Set Studs & Nuts for Propeller blades.

1 Set of Air Pump Guards & Studs.

1 Rubber disc for each Reducing Valve.

MAIN BOILERS:—

- 72 Gauge glasses.
- 2 Safety valve springs.
- 3 Doz. vulcanite rings for Gauge glasses.
- 6 Studs & nuts for Manhole doors.
- 12 C.C. Stay nuts.
- 1 Furnace front complete [Air distⁿ box, valves, doors & mountings]
- 2 " doors " with mountings.
- 2 Ashpit doors
- 1 Set Mica plates.
- 18 Ass^d parts for Furnace doors. [Handles, catches, hinges, &c.]
- 1 Portable Air Gauge.

CENTRIFUGAL CIRCULATING PUMP:—

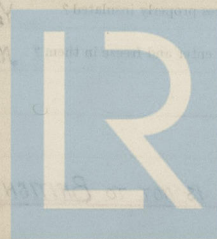
- 1 H.P. & 1 L.P. Piston complete. 1 Piston rod complete. 1 Crank shaft.
- 1 V. Spindle. 1 Pump spindle & Impeller. Set of Met. packing.

FAN ENGINE:—

- 1 Set of Metallic packing for piston rods.
- FEED PUMPS, GEN^t SERVICE PUMPS, BALLAST PUMP, SANITARY PUMP
- REFRIGERATOR PUMP, FRESH WATER PUMP:—

1 Set Suckⁿ, delivⁿ v's.

Rings for Steam & water ends



© 2020

Lloyd's Register
Foundation

REFRIGERATORS.

No. of Machines

2

Capacity of each

Makers

J. & E. Hall, L^{td}

Description

One, No 15A. D.T. C.O₂ Machine, No. 4567.
One No 7 Vert. Single do. (Ship's stores, 1 Stm cylr. 1
sor, 1 Crank, No 5089)

No. of Steam Cylinders, each Machine 2

2.

No. of Compressors 2.

2.

No. of Cranks 2

2.

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

Air Pump driven by Machine

2 Duplex Steam Brine & Water pumps, by Thom. Lamont & Co
L^{ts}, 6" x 8" x 8". Nos 10100 & 10101.

A Air Fans coupled direct to Electric Motors

System of Refrigeration

C. O₂ and Brine, circulating thro' air cooler grids

Insulation

Granulated cork & sheathing

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 ?

Not fitted.

Date of Test under Working Conditions

NOTE:- REFRIGERATING MACHINERY IS NOT TO BRITISH CORPORATION
SURVEY.

RESULTS OF TRIALS.

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

© 2020

Lloyd's Register
Foundation

ELECTRIC LIGHTING. CONTINUED.

CIRCUIT	Nº OF LIGHTS	CANDLE POWER	CURRENT REQUIRED AMPS.	SIZE OF CONDUCTOR	CURRENT DENSITY	CONDUCTIVITY OF CONDUCTOR	INSULATION RESISTANCE PER MILE
14) PUBLIC & STATE ROOMS, &c.	70.	16	35	19/052	1000 D.A.M.	100%	2500 MGS.
15) ACCOMMODATION [PORT]	50	16	25	"	"	"	"
16) " [STAR]	96	16	48	19/064	"	"	"

ELECTRIC LIGHTING.

Installation Fitted by **CAMPBELL & ISHERWOOD, LTD. BOOTLE. LIVERPOOL**No. and Description of Dynamos **3. 4-POLE COMPOUND. INTERPOLE.**Makers of Dynamos **CAMPBELL & ISHERWOOD, LTD.**Capacity " **550** Amperes, at **100** Volts, **450** Revols. per Min.Current Alternating or Continuous **CONTINUOUS**Single or Double Wire System **SINGLE**Position of Dynamos **STAR SIDE ENGINE ROOM. BOTTOM PLATFORM.**Main Switch Board " " " **AFT BULKHEAD.**No. of Circuits to which Switches are provided on Main Switch Board **16.**

Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1) Nº 1 COOLER MOTOR	-	-	250	37/103	1000 D.A.M.	100%	2,500 MGS.
2) " 2 " "	-	-	"	"	"	"	"
3) " 3 " "	-	-	"	"	"	"	"
4) " 4 " "	-	-	"	"	"	"	"
5) PUBLIC ROOM HEATERS	-	-	120	19/064	"	"	"
6) FORWARD HOLOS	54	16	27	19/052	"	"	"
7) AFT " "	63	"	32	"	"	"	"
8) POOP & FORECASTLE	38	"	19	7/064	"	"	"
9) ENGINE & BOILER ROOMS	39	"	20	"	"	"	"
10) REFRIGERATOR & COOLERS	36	"	18	"	"	"	"
11) EMERGENCY	60	"	60	19/064	"	"	"
12) ACCOMMODATION HEATERS	-	-	160	37/083	"	"	"
13) ASH HOISTS.	-	-	15	7/064	"	"	"

Total No. of Lights **506** No. of Motors driving Fans, &c. **40** No. of Heaters **46**Current required for Motors and Heaters **1350 AMPERES.**

BRIDGE DECK	EMERGENCY	5 WAYS
CHART ROOM		10 "
ENGINE		2 - 6 "

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.

S.W.G., Largest, No.

S.W.G

How are Conductors in Engine and Boiler Spaces protected ?

LEAD COVERED, ARMoured & BRAIDED.

Saloons, State Rooms, &c.

" " IN WOOD CASINGS

What special protection is provided in the following cases?—

- (1) Conductors exposed to Heat or Damp L.C.A. & B & V.I.R. IN STEEL GALV. TUBES
- (2) " passing through Bunkers or Cargo Spaces " " WOOD CASINGS
- (3) " " Deck Beams or Bulkheads FIBRE FERRULES & BRASS GLANDS.

is unimpaired? No JOINTS

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

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? YES, BETWEEN BRASS WASHERS

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? YES

What does the Resistance amount to ?

1 МЕГОМ.

Ohms.

Is the Installation supplied with a Voltmeter? YES. 3 ON EACH DYNAMO.

" " " an Ampere Meter? " " " "

Date of Trial of complete Installation

1-12-21

Duration of Trial 6 HOURS

ELECTRIC LIGHT

NOT TO B.C. SURVEY.

© 2020

Lloyd's Register
Foundation

GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans?

Yes

If not, give details of the points of difference, and state when these were sanctioned by the Chief

Surveyor.

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen sound and trustworthy?

Yes

Is the Workmanship throughout thoroughly satisfactory?

YES

The above correctly describes the Machinery of the S.S.

"TORTUGUERO".

as ascertained by me from personal examination

In order
bb

Geo. S. Macfarlane
Engineer Surveyor to the British Corporation for the
Survey and Registry of Shipping.

Fees—

MAIN BOILERS,

		£	s.	d.
H.S.	11511	Sq. ft.	:	:
G.S.	274	"	:	:

DONKEY BOILERS,

		£	s.	d.
H.S.	/	Sq. ft.	:	:
G.S.	/	"	:	:
		£	:	:

ENGINES,

		£	s.	d.
L.P.C.	149.3	Cub. ft.	:	:
		£	:	:
Testing, &c. ...			:	:
		£	:	:
Expenses ...			:	:
Total ...		£	:	:

It is submitted that this Report be approved,

W. H. King
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 11th January 1932.

Fees advised

Fees paid



© 2020

Lloyd's Register
Foundation
Secretary.

NOTIFICATION

To be

The following information is to be furnished to the Committee for the Control of M.E.S. in the

1. Name of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

2. Address of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

3. Date of the notification of the Committee for the Control of M.E.S. in the

4. Name of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

5. Address of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

6. Date of the notification of the Committee for the Control of M.E.S. in the

7. Name of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

8. Address of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

9. Date of the notification of the Committee for the Control of M.E.S. in the

10. Name of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

11. Address of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

12. Date of the notification of the Committee for the Control of M.E.S. in the

13. Name of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

14. Address of the person or persons who have been notified of the Committee for the Control of M.E.S. in the

15. Date of the notification of the Committee for the Control of M.E.S. in the

It is submitted that this Report be approved.

The Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the

Approved by the Committee for the Control of M.E.S. in the



© 2020

Lloyd's Register
Foundation



© 2020

Lloyd's Register
Foundation



© 2020

Lloyd's Register
Foundation